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ABSTRACT

This collection of conference papers includes: (1) "Using Market Forces to Make Title I More Effective" (Marci Kanstoroom and Tyce Palmaffy); (2) "Making Economically Grounded Decisions about Comprehensive School Reform Models: Considerations of Costs, Effects, and Contexts" (Jennifer King Rice); (3) "Does Title I Money Matter? Federal Compensatory Funding and Student Achievement" (Francis X. Shen); (4) "Sustaining Investments in Technology: Strategies to Close the Digital Divide" (Ronald E. Anderson); (5) "The Role of the State in Strengthening Title I Programs" (Margaret E. Goertz and Janet Kroll); (6) "Teacher Quality and Educational Inequality: The Case of Title I Schools" (Richard M. Ingersoll); (7) "School-Family Partnerships: Policy Implications for Urban Schools" (Evanthia N. Patrikakou, Roger P. Weissberg, and Michelle I. Rubenstein); (8) "Toward Effective Strategies in Raising Academic Performance: Findings from a National Study of Effective Title I Schoolwide Programs" (Margaret C. Wang and Kenneth K. Wong); (9) "Teachers' Perceptions of Title I Program Improvement and Accountability" (Jerome V. D'Agostino and Ginger L. Stoker); (10) "Title I in California: A Focus on English Language Learners, 1995-1999" (Diane August and Dianne Piche); (11) "Understanding Student Achievement Differences between Rural and Nonrural Schools: Implications for Title I Programs and Assessments" (Jaekyung Lee); and (12) "Epilogue: A Summary of Recommendations" (Kenneth K. Wong). (Individual papers contain references.) (SM)

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Efficiency, Accountability, and Equity Issues in Title I Schoolwide Program Implementation

edited by
Kenneth K. Wong
Margaret C. Wang

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A VOLUME IN: RESEARCH IN EDUCATIONAL PRODUCTIVITY

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Volume 2 in Research in Educational Productivity

Efficiency, Accountability, and Equity Issues in Title I Schoolwide Program Implementation

Efficiency, Accountability, and Equity Issues in Title I Schoolwide Program Implementation

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PREFACE

As series editor, I thank Kenneth Wong and the late Margaret Wang for envisioning and carrying out this book project. They recruited a distinguished group of scholars who brought their insights and evidence to bear upon the important topic of this volume: the past, present, and future education of children being reared in poverty. The authors focus on the ways educational productivity may best be improved for these children, whose prospects are of growing concern among policymakers as well as educators.

Two national invitational conferences on the topic were supported by a grant from the Office of Educational Research and Improvement (OERI) of the U.S. Department of Education for the Laboratory for Student Success, the mid-Atlantic regional educational laboratory at the Temple University Center for Research in Human Development and Education. The authors benefited from discussions with one another, other scholars, policymakers, educators, and parents. Julia St. George and Marilyn Murphy planned and coordinated the conferences to ensure they were well managed and productive. Bonnie B. Hartman provided invaluable editorial support in the preparation of the manuscripts for publication in this volume.

Margaret C. Wang provided much of the energy and vision that made this project and volume possible. Her untimely passing just before Thanksgiving 2000 shocked many scholars and educators. They were unaware of the battle she waged so valiantly against her disease even as the conferences and editing took place. Her spirit will continue to inspire us and guide us.

Herbert J. Walberg
Series Editor
Research in Educational Productivity

INTRODUCTION

Kenneth K. Wong

How efficient is Title I, the largest federal educational program in elementary and secondary schools? What is the quality of the Title I services? Has Title I promoted equity in schools among our nation's low-income areas? To address these important issues, this volume draws on the proceedings of two national invitational conferences, sponsored by the mid-Atlantic regional educational laboratory, the Laboratory for Student Success (LSS) at Temple University Center for Research in Human Development and Education in 1999 and 2000. These conferences aim to provide research-based information on how Title I schoolwide programs affect teaching, learning, and student outcomes and to strengthen cost-benefits in Title I program implementation to assist students in high-poverty schools. The focus of the conferences is particularly timely in view of the upcoming Title I reauthorization and the recently enacted federal Comprehensive School Reform Demonstration (CSRD) initiative.

Discussion at the conferences focused on enhancing our understanding of accountability, efficiency, and equity issues in Title I. More specifically, researchers at the two conferences:

a. highlighted findings from the National Study of Effective Title I Schoolwide Programs;
b. examined the effects of research-based comprehensive reform models in high-poverty schools; and
c. addressed cross-cutting issues such as the productivity of Title I programs, the use of technologies in the classroom, the role of the state in strengthening Title I programs, cost effectiveness of whole school reform, professional development, reading instruction, and parental involvement, which are important parts of the national educational reform agenda.

Leading researchers, policymakers, and practitioners were commissioned to develop preconference papers to serve as a springboard for discussion at the conferences. These papers included an overview of the research base and patterns of governance and conditions that lead to effective implementation of Title I schoolwide programs. The papers were reviewed by conference participants before the conferences and were used to develop next-step recommendations for advancing the implementation of the Title I schoolwide provision.

POLICY CONTEXT

By far, the largest federal program in elementary and secondary education is Title I of the Elementary and Secondary Education Act (ESEA), which was originally passed in 1965 at the height of the Civil Rights movement and of social reform legislation. Despite several revisions and extensions, ESEA Title I continued to adhere to its original redistributive goal of federal assistance to learning-deficient children from low-income families. As declared in the 1965 Act, ESEA Title I was designed

> "to provide financial assistance to local educational agencies serving areas with concentrations of children from low-income families to expand and improve their educational programs . . . which contribute particularly to meeting the special educational needs of educationally deprived children" (U.S.C. 1965, § 201).

The 1994 Improving America's Schools Act (IASA) established an ambitious agenda for systemic improvement in schools with a high concentration of students from at-risk backgrounds. The legislation posits the establishment of schoolwide programs to reduce curricular fragmentation and enhance instructional effectiveness for schools as a whole. These expectations are further strengthened by Public Law 105-78, enacted in November 1997 (known as the Obey-Porter legislation), in which Congress appropriated an additional $145 million to support the CSRD program for Year 1 of the 3-year demonstration program.

Although the schoolwide approach to school reform is at the forefront of the national agenda to improve schooling quality for at-risk children, the knowledge base on program effects is sorely lacking (Wong & Wang, 1994; Wang & Wong, 1997). The challenge of maintaining the proper balance between efficiency and equity remains. To fill this gap, the two conferences and their proceedings aim to take stock of what we know about the implementation of Title I schoolwide programs, including cost-efficiency issues, and to examine the impact of Title I schoolwide programs on student learning.

POLICY CHALLENGE: EFFICIENCY AND ACCOUNTABILITY

A key policy challenge in the current climate of heightened accountability is determining whether Title I money raises student performance. Information about the impact of Title I schoolwide programs on student achievement is especially limited. For the few studies that report on student performance, the results have been largely mixed. A few examples can be cited. A 1997 report on special strategies for educating disadvantaged children compared student performance indicators for six schoolwide schools with national averages for comparable schools (Stringfield et al., 1997). Although the report observed that these schoolwide program schools and their students were benefiting from Title I support and that nearly all of the school faculty were supportive of the schoolwide program, it concluded that the schools were "not producing remarkable levels of student achievement" (p.14–32). Documenting the positive impact of additional staff development and the freedom of principals to select teachers in two highly supported urban schoolwide programs, the authors argued that "the evidence seems to suggest that schoolwide programs produce academic gains only when accompanied by active, long-term, steady, focused academic support" (p. 14–32). The Final Report on Student Outcomes, generated from the nationally representative Prospects database, also presents information suggestive of mixed results in Title I programs (Puma, Karweit, Price, Ricciuti, Thompson, & Vaden-Kiernan, 1997). Likewise, various studies on specific districts suggest modest effects of schoolwide programs on reading achievement scores (see Wong & Meyer, 1998 for a synthesis of the studies' findings).

More recently, Title I schools have been encouraged to adopt externally designed models (or CSRD models) that have proven effective elsewhere. However, evaluation of the first phase of CSRD reform has been largely mixed. The American Institutes for Research (1999) conducted the most comprehensive study of CSRD reform models. The AIR study examined the design, implementation, and performance outcomes of 24 whole school reform models. The study synthesized student achievement information and conducted a survey of the support provided by the model designers during the start-up phase, costs to the schools, the duration of the project, and the number of schools using the whole school reform approach. Using these diverse sources of information, the AIR observed that few reform models have substantiated their claims with hard evidence. Schools have adopted approaches without taking into full consideration local circumstances and needs. In terms of student achievement, only 3 of the 24 whole school reform approaches showed strong evidence of positive effects. In contrast to the AIR study, several case studies have identified effective strategies (Bodilly & Berends, 1999; Stringfield et al., 1997). In short, there is a need for an empirical research base to address whether the

1997 whole school reform legislative expectations are being realized at the district, school, and classroom levels.

In light of the mixed performance, Title I schools, particularly low-performing, inner city schools, have been the target for experimental vouchers, as proposed by Florida Governor Jeb Bush, congressional leaders, and think tanks. Seeing virtually no cost efficiency in the billions of Title I dollars spent, proponents of this approach look to consumer-parents to pressure schools to improve (Walberg, 1998; Ravitch & Viteritti, 1997; see chapter by Kanstoroom & Palmaffy in this volume). Under the voucher system, dollars would follow the students, even if they selected nonpublic schools. Parents would decide whether their chosen schools were meeting their preferences and expectations. In the longer run, it is hypothesized, this consumer-centered process will create competition among schools, leading to the closure of failing schools.

Converting Title I grants into vouchers has been attempted in the course of Title I history. The Reagan administration tried three times to convert the federal program into a voucher arrangement. The most serious proposal was the Equity Choice Act (H.R. 3821) in November 1985, also known as "TEACH." This bill would have allowed Title I students, at their parents' request, to attend any school in the district. None of the Reagan proposals were seriously considered by the Democratic-controlled Congress; however, since 1995, when the Republicans gained control over Congress, voucher proposals have gained support. In the spring of 2000, for example, the Senate Republican majority pushed through major changes in the Health, Education, Labor and Pensions Committee. In the proposed Senate Bill 2, the GOP plan would allow 10 states to turn Title I into a portable voucher program. In these states, Title I funds would follow the students even when they enroll in nonpublic schools. The GOP plan also identifies over 7,000 failing Title I schools where students would be allowed to transfer to other public schools if the schools' performance did not improve in four years. Under the Bush administration, there is an increasing likelihood that an experimental program on Title I vouchers may be implemented.

HIGHLIGHTS OF THE CHAPTERS

In light of the current policy debate on Title I reform, this volume will serve five purposes: (a) to provide a research base on important cross-cutting issues on Title I, including efficiency, accountability, and equity; (b) to summarize the major findings of the National Study of Title I Schoolwide Programs; (c) to provide the practitioners' perspectives on how schoolwide programs can be effective in improving student performance; (d) to assess the cost effectiveness of whole school reform in the context of Title I implementation, and (e) to foster the development of new professional networks that support a wider adoption of effective strategies in challenging urban and rural settings.

The book consists of 11 chapters, nine of which were part of the two conference proceedings. Two additional chapters were solicited for the book to address the critical challenge of identifying efficiency—a topic that needs more focused attention in Title I research.

Section I: Efficiency

This section begins with a new article by Marci Kanstoroom and Tyce Palmaffy entitled "Using Market Forces to Make Title I More Effective." This chapter fills an important knowledge gap by bringing in the perspective of market-based efficiency.

In "Making Economically-Grounded Decisions About Comprehensive School Reform Models: Consideration of Costs, Effects, and Contexts." Jennifer King Rice draws on the cost efficiency literature in her analysis of whole school reform.

In a second new chapter for the volume, "Does Title I Money Matter? Federal Compensatory Funding and Student Achievement." Francis X. Shen uses a national sample of Title I students to empirically examine whether there is a significant relationship between Title I inputs, such as dollars spent, and student performance on the Comprehensive Test of Basic Skills (CTBS).

Finally, Ronald E. Anderson in "Sustaining Investments in Technology: Strategies to Close the Digital Divide" argues for a systematic approach to connect technologies to instructional practices. According to his analysis, the digital divide can be narrowed by infusions of funding for resources and technology leadership at the school level.

Section II: Accountability

Margaret Geortz and Janet Kroll open this section with "The Role of the State in Strengthening Title I Programs." This chapter examines interstate variation in accountability and administration of Title I policy.

Next, Richard M. Ingersoll investigates "Teacher Quality and Educational Inequality: The Case of Title I Schools." Ingersoll conducts an empirical analysis of the reasons why Title I schools have less qualified teachers. From an organizational perspective, Ingersoll argues that the manner in which teachers are managed, employed, and utilized can account for as much of the problem of "underqualified teaching" as do inadequacies in the supply of qualified teachers.

In the third chapter, Eva Patrikakou, Roger Weissberg, and Michelle I. Rubenstein address "School–Family Partnerships: Policy Implications for Urban Schools." The authors compare three major reform models in improving school–community collaboration.

In the following chapter, "Toward Effective Strategies in Raising Academic Performance: Findings from A National Study of Effective Title I School Wide Programs," Margaret Wang and Kenneth Wong conduct an empirical comparison of effective and less effective Title I schools in 12 districts across the nation. Data collection involved five regional laboratories. Effectiveness is defined in terms of student achievement after controlling for poverty. The authors call attention to the need to sharpen the focus on accountability in high-poverty schools.

The last chapter in this section, "Teachers' Perceptions of Title I Program Improvement and Accountability" by Jerome V. D'Agostino and Ginger L. Stoker, examines how teachers' affective and cognitive processes play a key role in responding to accountability standards.

Section III: Equity

The final section begins with a chapter by Diane August and Dianne Piche entitled "Title I in California: A Focus on English Language Learners, 1995–1999." Drawing on extensive field-based data, the authors examine recent developments in state policy and practice regarding student assessment and accountability issues.

The volume concludes with Jaekyung Lee's chapter, "Understanding Student Achievement Differences Between Rural and Nonrural Schools: Implications for Title I programs and Assessments." Lee makes use of the national database, the National Assessment of Educational Progress (NAEP), to compare urban and rural schools in terms of curriculum, teaching, and productivity.

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SECTION I

EFFICIENCY

CHAPTER 1

USING MARKET FORCES TO MAKE TITLE I MORE EFFECTIVE

Marci Kanstoroom and Tyce Palmaffy

> No law I have signed or will ever sign
> means more to the future of America.
> —*Lyndon Johnson, April 11, 1965, on signing the Elementary and Secondary Education Act (as quoted in Halperin, 1975).*

Title I of the Elementary and Secondary Education Act (ESEA) of 1965 is the centerpiece of the federal role in education. Its annual appropriation of $8 billion accounts for nearly a quarter of the federal Department of Education's yearly budget, making it by far the largest source of federal aid to elementary and secondary schools. During the past three decades, Title I has sent more than $100 billion to local school districts with an ambitious mandate attached: to close the achievement gap between advantaged and disadvantaged students.

Most Title I funds—about $7.3 billion in 1998—flow directly to local schools, where they are used to provide extra help to low-achieving students. These dollars support various activities, from tutoring to computer-assisted learning to health and counseling programs to the promotion of parental involvement. The rest of the Title I appropriation sustains smaller categorical programs to aid migrant children, neglected and delinquent children, and the Even Start family literacy program.

This report deals solely with the large general aid program. It has four sections: The first section outlines the history of Title I, including the legislative debates that surrounded its passage, the subsequent attempts to regulate the use of Title I funds, and its slow march from a program concerned only with fiscal compliance to one that seeks to foster education reform. The next section reviews the research on Title I's effects and evaluates the claims that Title I is partially responsible for the improved educational achievement of minority students during the past three decades. The third section briefly examines the structure of Title I today. The states have come to play a larger role in Title I reform, and their success in doing so is reviewed. The final section argues that, while nearly everyone agrees with the purposes of Title I, the program's current trajectory will never produce the kinds of fundamental changes that poorly performing schools most need. Turning Title I into portable grants whose dollars follow poor children to the school (or other education provider) of their parents' choice is proposed as a solution.

THREE DECADES OF FRUSTRATION

During the past decade, Title I has become far more ambitious than its original supporters envisioned. Reformers have long criticized Title I for being just a loosely regulated source of extra money for high-poverty schools, with no accountability for results. In response, Title I has shifted in the direction of stirring change at the state level. The 1994 reauthorization required states to embark on "systemic reform," a philosophy of education reform that has captured the imaginations of liberals and conservatives alike (for a fuller explanation of systemic reform, see O'Day and Smith, 1993). It entailed developing curriculum standards that outline what students should learn, creating statewide assessments that test students' knowledge of the curriculum standards, and setting performance standards that define several levels of achievement on the tests.

These reforms, which began as state initiatives during the 1980s, became the cornerstone of federal education policy in the 1990s. Standards and testing were heavily promoted by the Bush administration as part of its America 2000 campaign, and the Clinton administration wrote some of the principles of systemic reform into law with its Goals 2000 legislation. The administration in fact regarded the 1994 reauthorization of Title I as an opportunity to align the program with the reform framework established by Goals 2000 (Smith, Scoll, & Plisko, 1995).

Several indicting assumptions underlie the systemic reform movement and, by extension, the new direction of Title I: that without state standards, many of the schools serving low-income and minority students will continue to set far lower academic expectations than those serving wealthier students; that without state assessments, they will neglect to track whether students are achieving at high levels; and that without a public accountability system, they will not offer a high-quality education.

That such a vocal supporter of public education as the Clinton administration would endorse these assumptions is remarkable enough. But what is truly striking is how eager Title I's longtime *advocates*, the driving force behind its original design, have been to abandon the program's traditional respect for local autonomy.

This switch reflects advocates' increasing frustration over Title I's failure to close the achievement gap between poor and well-to-do students, as its founders thought it would. Surprisingly little of this frustration is directed at the federal government itself. For the most part, program advocates view Title I's failure as a *local* failure. The Citizens' Commission on Civil Rights, a liberal advocacy group devoted to Title I reform, released a report in Fall 1998 decrying "the widespread propensity of school officials to maintain and tolerate a permanent underclass of low-achieving students who are disproportionately poor and minority" (Piché, 1998, p. 16). How advocates came to be so exasperated with the nation's school system is deeply rooted in Title I's history—most deeply in the choices that local educators have made over time in reaction to federal attempts to ensure the program's fiscal and academic accountability.

THE GREAT SOCIETY

Before 1965, both the funding and provision of education were almost solely local concerns. Federal involvement was sparse, and the states' role only extended to setting minimum standards, certifying teachers, and requiring certain courses such as state history. Although this relatively unplanned, unregulated system of neighborhood schools and mostly autonomous districts allowed localities to determine their own education priorities, it also led to enormous interstate and intrastate disparities in quality and resources. The tradition of funding schools with local property taxes left high-poverty areas with scarce money for education, and racial segregation saddled many minority students with a substandard education (for the debates surrounding Title I's passage, see Bailey & Mosher, 1968; Jeffrey, 1978; Graham, 1984. For pre-1970 history, see Bailey & Mosher; Graham; Kaestle & Smith, 1982. For general history, see Vinovskis, 1997).

Although the civil rights movement and the War on Poverty would eventually address these inequities at the federal level, it was the events of the Cold War that broke the country's longstanding resistance to federal involvement in and aid to education. In particular, the 1957 launching of the Soviet spacecraft Sputnik heightened fears that American education was inadequate to cope with the technological needs of the modern era.

Thus, education became not only a concern of parents and communities but also a matter of national security. Congress soon passed the National Defense Education Act (NDEA) of 1958, which provided funds for science, math, and foreign language education.

Reformers of the day regarded NDEA not just as a means to provide schools with more money but as a major symbolic breakthrough. In securing federal funds for local education expenditures, they had overcome the obstacles that had blocked past efforts to aid education. They had assuaged, for the moment at least, conservative fears of federal control over education, the demands of religious groups that private schools be aided as well, and the views of state and local educators that they, not the federal government, should decide how education dollars are spent.

Having cleared the road for federal funds to flow to schools, interest groups pushed for more. Whereas NDEA had provided categorical aid for the teaching of certain subjects and focused on the nation's best and brightest, organizations such as the National Education Association sought more general aid for teacher salaries, school construction, and so on. Representative Carl Perkins of Kentucky, who introduced several education bills during the 1960s, reflected their perspective best in Congress. He thought the federal government needed to be involved in public education because of its superior revenue-raising powers, especially its ability to tap income and corporate taxes for school spending. Reformers also believed that the federal government could help equalize funding between states and between districts, and that its influence would help to professionalize education by bringing research dollars and expertise into the field. The booming economy of the 1960s and the baby-boom-induced rise in the school age population bolstered the view that the United States had both the means and the need to devote more federal resources to education.

Efforts at passing legislation during the Kennedy administration foundered in Congress. But Lyndon Johnson's landslide reelection in 1964 and the ascendance of strong Democratic majorities in both the House and Senate put in place a corps of politicians committed to federal aid to education. Many of them shared Johnson's belief that education could lift children out of poverty if their schools had the resources to give them extra help. By the mid-1960s, the link between poverty and low academic achievement was well established: Instead of providing the general aid that education interest groups had sought, Johnson and his congressional allies moved to target federal funds to disadvantaged children. Despite some roadblocks, such as the continued opposition of Catholic and other religious groups to any federal education aid that failed to include private schools, they soon succeeded.[1] In 1965, the ESEA easily passed Congress with five sixths of the funds (nearly $1 billion) allocated to the compensatory program set up under Title I. Its ambitious purpose was to eliminate the achievement gap between wealthy and poor children.

Free Money

To satisfy conservatives and educators who continued to worry about too much federal intrusion into the workings of what were still primarily local institutions, Title I funds initially came with few strings attached. In the legislation's vague terms, the money was given to Local Education Agencies (LEAs) to design programs of "sufficient size, scope, and quality" to meet the "special educational needs" of disadvantaged children (Sec. 205(a), Public Law 89-10). After designing such programs, LEAs submitted their plans to their respective State Education Agencies (SEAs) for approval. The SEAs had to give the federal Department of Health, Welfare, and Education assurance that local districts were meeting the requirements of the legislation, but the SEAs were still immature organizations, unaccustomed to strictly regulating local programs. And they received little guidance from federal regulators. In practice, the LEAs pretty much ran their programs as they saw fit (Murphy, 1971; McLaughlin, 1976).

Title I funds were distributed to districts based on the number of children living in poverty and the state's average per-pupil spending. From the start, this formula was the most hotly debated part of the legislation. By basing Title I grants on a nationwide formula instead of allowing the states to distribute the funds, Congress sought to ensure that the funds would reach the intended children. But using a state's per-pupil spending as a factor tended to favor wealthy states that spent more on education, and several congressmen unsuccessfully tried to base the grants solely on the incidence of poverty. Congressmen also naturally tried to secure as much money for their districts as possible. Thus the final legislation stipulated that only 3 percent of a district's children needed to be eligible for funding in order for the district to receive a grant, with the result that Title I funds were thinly distributed to nearly every school district in the country.

Early reviews of the program found that many districts considered Title I funds to be general aid and treated them as such. Stories filtered out about schools using Title I money to build swimming pools and provide services to ineligible children (Martin & McClure, 1969). The reasons for these misuses of the Title I funds were fairly predictable. Congress had suddenly charged the understaffed, inexperienced U.S. Office of Education with the responsibility of regulating and monitoring a program that affected nearly every school district in the country—a job for which it was not yet ready. Any power the federal office might have had to ensure that local districts complied with the law was further curbed by the tradition of local control in education. The office certainly could not revoke misused funds or otherwise punish districts for lax administration of the program (Murphy, 1971).

The legislation also assumed that educators knew how to create effective compensatory programs and that Title I would enable them to serve effectively the students whom they had ill-served in the past. Neither assumption turned out to be true (McLaughlin, 1976). With no special compensatory programs in mind, no competition for the funding, and little guidance on how to spend the money, Title I became exactly what it was not supposed to be: just another revenue source for schools.

Tightening the Federal Clamp

In the early 1970s, civil rights groups and legislators began to call for a tightening of federal regulations to ensure that Title I funds were being spent on eligible children. In response, federal regulators developed stricter rules governing program expenditures and allowed local districts to use Title I funds to pay administrative personnel whose main function would be to know the rules and enforce them. Federal officials established relationships with these program managers, inviting them to conferences and providing them with program updates, and thus created a cadre of local Title I administrators who were supposed to play watchdog and lessen the need for federal oversight (Chubb, 1988). They were backed up and, to some degree, kept on their toes by occasional federal audits.

The logic undergirding this more stringent enforcement seemed airtight: If the funds were not being spent on disadvantaged children, why would we expect the program to boost their achievement? Yet the regulations promulgated during the 1970s and the reaction of local districts to them would become Title I's defining feature—and a frequent object of scorn.

With each succeeding reauthorization of the legislation—in 1968, 1970, 1974, and 1978—came new guidelines and requirements for the receipt and use of Title I funds. Conceptually, most of them seemed sensible. Maintenance of effort guidelines required that a district's revenues from local and state sources not dip below the previous year's level. In other words, Title I funds were to augment preexisting state and local funds, not to enable states and localities to lower taxes. Comparability guidelines required that, within a district, each school receive the same resources before Title I was added in. The underlying principle was that Title I should supplement the education of disadvantaged kids, not give them what was already available for better-off children. Perhaps the best-known Title I provision, "supplement, not supplant," required that federal dollars not be used to pay for services otherwise given to kids or required by states. For instance, if a state established a cap on first-grade class sizes, Title I funds could only be used to go below the cap, not to reach it. The excess cost provision further clarified "supplement, not supplant" by mandating that Title I funds be used to pay only the additional costs of supplementary services. For instance, only that part of a teacher's salary that corresponds to the amount of time she spends teaching Title I kids may be paid for with Title I funds (see Peterson, Rabe, & Wong, 1988, pp. 38–39). In extreme cases, Title I teachers were not allowed to supervise children in the playground or hallways because they would be working with some ineligible children (Smith, 1988, p. 130).

Other regulations required districts to spend a certain amount of funds on parental involvement activities, to serve high-poverty schools before low-poverty ones, and to conduct needs assessments that identify educationally disadvantaged children and design programs to meet their needs. The spirit of these regulations was to direct Title I funding toward poor children, a goal consonant with the original legislation's intent. For the most part, the new regulations worked, at least in terms of ensuring that the money went where it was intended. Post-1975 studies of Title I found that an influx of Title I funds to districts produced a dollar-for-dollar increase in total spending (Odden, 1988, pp. 183–84). Meanwhile, the percentage of kids served by Title I who were not low achievers—in other words, kids who did not need the program—dropped dramatically (Peterson et al., 1988, pp. 41–42). Title I funds flowed into schools based on the number of poor children attending them. But within schools, the funds were to be spent on the children who were furthest behind in achievement, regardless of their income levels.

Bad Choices

On the academic side of the ledger, however, schools now tended to make decisions based not on their educational value but on their ability to meet audit requirements. In particular, to satisfy the "supplement, not supplant" rule, educators began pulling children out of their regular classrooms to receive reading or math instruction from a Title I teacher or aide. The purpose was to create a clear audit trail: if Title I students were taught separately by Title I staff using materials purchased with Title I money, Title I funds were clearly not being used to give services to ineligible children. By 1976, some 70 percent of Title I children received instruction in this manner (Kaestle & Smith, 1982, p. 400).

This practice came under fire from both educators and policymakers. They claimed that "pull-out programs," as they came to be called, needlessly stigmatized some children as Title I kids. Moreover, pull-outs were often staffed by instructional aides, not certified teachers. They tended to run drill-and-practice sessions that concentrated on basic skills instruction in reading and math, using a curriculum that was rarely aligned with the one used in the regular classroom. Children were spirited away from their trained teachers during class time, placed with poorly trained Title I aides who often had no credential higher than a high-school diploma, and given instruction in a separate curriculum with different books and class work. Hardly anyone thought this was sound educational practice.

Indeed, by the mid-1970s, top policymakers were complaining that pull-outs left untouched the regular classrooms that had failed poor children in the first place. Worse, the creation of a separate Title I administrative and instructional structure engendered a feeling among many teachers and administrators that Title I kids were no longer their responsibility (Kaestle & Smith, 1982; Winfield, 1991). Such criticism led Marshall Smith, former U.S. undersecretary of Education, and historian Carl Kaestle to write in 1982, "After almost two decades of intervention, the Title I program stands primarily as a symbol of national concern for the poor rather than as a viable response to their needs" (p. 400).

What was particularly strange was the extent to which local educators adopted similar policies and programs in response to federal regulations, as if federal authorities had imposed the pull-out design on every school and district. Some advocates even claimed that this was indeed the case. Valena Plisko, a program evaluation official in the U.S. Department of Education, and Marshall Smith wrote in 1995 that Title I regulations had caused local schools to focus on "easily monitored, low-level, basic skills instruction that often resulted in a double deficit of lost regular classroom time and less challenging instruction" (Smith, Scoll, & Plisko, p. 5).

But federal regulations never required or even recommended pull-outs, and it was a local choice to engage in basic skills instruction. Local schools could have chosen to run before- or after-school programs instead of taking time out of the regular school day for Title I services. They could have used Title I funds to extend the school year or school day or to set up a summer school program. They could have promoted collaborative relationships between Title I staff and regular teachers, to align the curricula and tailor services to each child. They could have provided an enriched curriculum instead of low-level instruction. All of these options were clearly permitted under Title I's regulations.

In the 1980s, for instance, Dade County, Florida, ran an after-school Title I program to which teachers had to apply. Only the district's best teachers were selected, making it something of an honor to be named a Title I teacher (Peterson et al., 1988). It was the best of both worlds: Federal auditors were pleased, and Title I kids received instruction from highly qualified teachers without missing any regular classroom time. Why, one might ask, were programs like Dade County's so rare? As far as anyone can tell, pull-outs simply offered the path of least resistance: Children were already in school from 8 a.m. to 3 p.m., so that is when Title I services were given. Convenience, in short, had trumped efficacy.

Continued Disappointments

By the late 1970s, Title I advocates inside and outside the U.S. Department of Education were fairly satisfied that the money was reaching its intended recipients. But as of yet there was little evidence that Title I was making a difference in student achievement, let alone closing the achievement gap. (See the next section of this report for a review of the research literature on Title I.) In addition, well-respected scholars such as Christopher Jencks (1972) and James Coleman (1966) had become extremely pessimistic about compensatory education's ability to overcome the effects of family poverty and social breakdown.

Yet Title I continued to lead a charmed life in Congress. Nearly every year after the program's inception saw its funding increase, and every half-decade or so Congress reauthorized the program by wide margins. In 1981 its name was changed to Chapter 1 of the Education Consolidation and Improvement Act, but it managed to escape the Reagan administration's attempts to send federal funds to the states in block grants. The 1981 reauthorization did introduce some deregulation in response to the complaints of educators, but by now Title I was a mature program whose administrators at the local level had finally learned what they could and could not do. They weren't about to change and risk failing a federal audit.

Frustration with the program's seeming ineffectiveness, however, continued to mount. The critics' main concern was still that Title I's separation from what happened in the regular classroom did nothing to promote change in the place where students spent the bulk of their time. In a 1986 letter to Secretary of Education William J. Bennett, California State Superintendent of Education Bill Honig wrote, "The isolation of Chapter 1 students and service providers undermines efforts to attain academic excellence in school. Planning for the use of Chapter 1 funds should be at the school level and constitute an integral part of the schools' total program" (Kirst, 1998). Congress responded by creating the schoolwide option. Originally limited to schools with over 75 percent of their children living in poverty, schoolwide Title I allowed eligible schools to spend their federal funds on general improvement. They no longer had to trace the dollars to individual children, obviating the perceived need for pull-outs. Until the 1988 reauthorization, however, districts had to provide matching funds for any previously ineligible children who were now being served in a schoolwide program, which kept many schools from switching to such a program.

Program Improvement

The 1988 reauthorization marked a turning point. Besides encouraging schoolwide programs by doing away with the matching funds requirement, Congress finally introduced a small measure of academic accountability into the program. Title I had always required local districts to test their students and report the findings to their respective state agencies. But there had never been any consequences for poor performance. Financial compliance had historically been far more important than the program's effectiveness.

Consequences would now come in the form of what Congress termed "program improvement." States were required to designate certain schools for program improvement based on their annual progress as measured by standardized test scores. In order to gauge progress, local districts reported test scores in terms of Normal Curve Equivalents (NCEs). NCEs essentially indicate how a student measures up against his peers, that is, a student who scores at the 50th percentile did better than half the population of test takers. A student who scores at the 50th percentile two years in a row would have gained a year's worth of knowledge, but his relative standing would not have changed. His progress would thus be zero. Congress left it to states to decide how much progress was necessary to avoid being marked for program improvement. Most states set a very low standard (see LeTendre, 1991; Fagan & Heid, 1991).

Being tapped for program improvement merely meant that a school had to work with parents, the community, and the local district to devise a plan for increasing achievement. Yet schools viewed it as punishment for poor performance. "If you designate someone for program improvement," says long time congressional aide John Jennings, now director of the Center for Education Policy, "you're publicly saying they've failed." So schools tried to avoid program improvement at all costs.

Efforts to avoid program improvement should have entailed strengthening the curriculum and motivating the school staff to work tirelessly toward common goals, but instead it led to perverse decision making. For instance, educators generally recognize that it is more effective to provide quality instruction in the early grades than to provide remedial instruction later. But students ordinarily weren't tested before second or third grade. Therefore, according to Robert Slavin and Nancy Madden of Johns Hopkins University (1991), schools focused their resources on later grades, when, for Title I monitoring purposes, progress mattered. The program improvement guidelines also rewarded schools for holding students back because they would take the same test twice and record enormous gains (Slavin & Madden, 1991). These strange incentives and the schooling decisions that followed led Success for All co-founders Slavin and Madden (1991) to write, with welcome honesty, "The most important thing we have learned after 15 years of 'accountability' in education is that high-stakes assessments do in fact drive instruction and other school practices but that if schools can find an easier way to affect assessments than to do a better job of teaching, they will often do so" (p. 376).

Fumbling Toward Accountability

By the spring of 1992, 20 percent of Title I schools were in some stage of program improvement (Education Funding Research Council, 1992), but hardly anyone thought this was the answer to Title I's problems. Poorly designed incentives, natural year-to-year fluctuations in standardized test scores, and the tendency of states to set low standards made program improvement an inconsistent, ineffectual process. It certainly would not lead to the wholesale changes that Title I's advocates and critics sought. A burgeoning reform movement, however, held more promise.

It began in Charlottesville, Virginia, where President Bush gathered the nation's governors for an education summit in 1989. There they established six National Education Goals to be met by the year 2000. More broadly, they committed themselves to so-called standards-based reform. The idea was to have states establish curriculum guidelines for what students should learn at each level of schooling, giving schools a clear roadmap and goals to meet along the way. In the summit's aftermath, what has widely been termed the "accountability" movement began percolating in the states. Several states moved to develop curriculum standards and new assessments. At the federal level, these ideas were eventually represented by the Goals 2000 legislation, a program of competitive grants that encourages and funds the development of state standards and local reforms.

The 1994 reauthorization of Title I can be seen as an effort to align Title I with the accountability movement and to use federal leverage to push it along. It required states to develop aligned curriculum standards and assessments for all students. The new assessments replaced the norm-referenced tests (that measure how students compare to one another) with criterion-referenced tests that measure how much of the curriculum a student has actually mastered. Other important provisions required local schools to set aside a portion of their funds for teacher training (or, in the argot of educators, "professional development") and parental involvement activities.

The Department of Education was also given broader authority to waive Title I regulations, giving states and localities more flexibility in running the program. The cutoff for exercising the schoolwide option was lowered to 50 percent of students living in poverty. More schools could thus use Title I money for general improvement, in the hopes that state accountability systems would force them to show results.

The expansion of schoolwide programs and the requirement that states begin to develop standards and tests reflect the desire among Title I advocates that the program be integral to school reform, not just a set of supplementary services. They had also grown increasingly frustrated with the lack of progress schools had shown and with the low expectations school officials had continually set for poor and minority children.

For now, the philosophical shift undergirding these reforms is more important than the reforms themselves. For decades, market-minded reformers had argued that educators tended to focus more on process than results—on how money was spent rather than whether the money had produced a measurable rise in achievement. In principle, at least, the 1994 Title I reforms represented an embrace of this critique.

RESEARCH ON TITLE I

The body of research on Title I's effectiveness encompasses hundreds of local and state evaluations, several scholarly attempts to make sense of those evaluations, and two long-term studies funded by the U.S. Department of Education. These research findings, as Title I advocates insist, should not be the only criterion by which we judge the program. But after spending upwards of $100 billion to close the achievement gap between disadvantaged children and others, it is not unreasonable to ask what has been accomplished. Only well-designed studies of program efficacy can tell us that.

The most important evidence comes from the two federally funded studies, *Sustaining Effects* and *Prospects* (Puma, Karweit, Price, Ricciuti, Thompson, & Vadeu-Kiernan, 1997). Beginning in 1976 and continuing for three years, the *Sustaining Effects* study collected data on 120,000 students in over 300 elementary schools. Its key finding was that the achievement levels of Title I students rose at the same rate as those of ineligible students; the achievement gap neither widened nor narrowed (Carter, 1984).

The study also found that only moderately low-achieving students seemed to benefit from Title I; the program did not help children who began at the bottom of the achievement curve. By the time Title I students had reached junior high, any academic gains relative to their more advantaged peers had disappeared—a phenomenon researchers term the "fade-out effect" (Carter, 1984; on the fade-out effect see Borman and D'Agostino, 1996). Further research has suggested that *Sustaining Effects* may even have overestimated students' early gains by pretesting children in the fall and delivering the posttest in the spring. Student achievement tends to drop during the summer months, particularly for disadvantaged youngsters, necessitating fall-to-fall or spring-to-spring testing for a reliable measure of annual achievement gains (McDill & Natriello, 1998). Regardless of the explanations for low achievement, it was clear by the early 1980s that Title I was having, at best, a marginal effect on student achievement.

That depressing conclusion seemed to corroborate the developing consensus among scholars that there was little schools could do to counteract the corrosive influence of living in impoverished conditions (see Jencks et al., 1972; Coleman et al., 1966). Adding further evidence was Stephen Mullin and Anita Summers's (1983) oft-cited review of forty-seven studies of compensatory education programs. Published at nearly the same time as *Sustaining Effects*, their review included national and local studies of both Title I-funded and other compensatory education programs. Mullin and Summes found no link between the amount of money a program spent and the degree to which it raised achievement. They also encountered the fade-out effect that *Sustaining Effects* had reported. Likewise, they found that many of the studies that reported achievement gains suffered from poor statistical methods such as fall-to-spring testing, which tended to overstate any rise in achievement. In short, compensatory education didn't seem to compensate for much of anything.

Prospecting for Gold, Finding Coal

Despite this bleak picture, the upsurge in Title I funding continued through the 1980s and into the 1990s. The structure of the program, meanwhile, did not change in any meaningful way. (The creation of program improvement was an important philosophical shift, but in practice it changed little about how Title I functioned.) Congress, however, was becoming increasingly interested in finding ways to make Title I more results-oriented. With that goal in mind, the 1988 reauthorization of Title I mandated a national assessment of the program that was to include a rigorous, long-term study of the program's effects on student achievement. Known as *Prospects*, the study tracked an initial sample of 40,000 students for three years, from 1991 to 1994.

Improved statistical methods and its longitudinal nature make *Prospects* the most comprehensive and authoritative study of Title I ever undertaken, which makes its conclusions even more depressing. *Prospects* found that Title I students started school well behind their peers and failed to narrow that initial achievement gap over time. Moreover, after using sophisticated statistical techniques to adjust the results of Title I students and non-Title I students to control for family, school, and income differences, the conclusion was no different: The academic growth of Title I students was no faster than that of more advantaged students, leaving the achievement chasm unbridged (Puma et al., 1997, pp. 41, 46). The *Prospects* researchers also compared students' achievement in years in which they received Title I services with years in which they did not receive services. Again, they found no difference in students' academic growth, leading them to write, "[T]here was no indication in the *Prospects* data that [Title I] participation improved students' educational outcomes" (p. 52). This finding, included as part of a 1993 interim report, in part sparked the changes made in the 1994 reauthorization (see Puma, 1993).

Nevertheless, the *Prospects* report had an important caveat. One problem inherent in any study of Title I is that students are selected for services based on certain criteria. Thus, they are different from students who are ineligible for Title I funds. This distinction is important because they may be different in ways that tend to further hamper their academic growth, such as living in a single parent household or in a high poverty area. An ideal study would randomly assign students to a test group and a control group—a group of students who receive Title I services and a group who do not. That would be the two groups' only meaningful difference, allowing researchers to isolate the effects of the Title I program. If the Title I students achieve at a faster rate than the control group, then Title I services have added value to their educational experience.

Neither *Prospects* nor *Sustaining Effects* set up such a controlled experiment. Although both studies tried to control for the differences between Title I and non-Title I students, the fact that the differences existed still confounded the results. Thus its findings, *Prospects* notes, are only "suggestive"—there is simply no definitive way of knowing how students would have done absent the program (Puma et al., 1997, pp. 40, 55). Title I may not have narrowed the achievement gap, but we don't know how much the achievement gap may have widened *without* the program. The finding that Title I students fared no worse in years in which they did not receive Title I services, however, suggests that they would not have fallen any farther behind had they not been a part of the Title I program.

Which Numbers To Believe?

Another approach, known among social scientists as "meta-analysis," is to take the data from a series of smaller studies and statistically amass the numbers to draw out more meaningful results. By doing so, Geoffrey Borman and Jerome D'Agostino painted a slightly rosier picture in their 1996 review of seventeen studies spanning the history of Title I. They corroborated the fade-out effect and confirmed that student achievement took a few steps back during the summer months. But they also found that Title I, in a sense, had learned—that the program had become more effective over time. Another important finding was that students who received Title I help in the elementary grades outperformed those who did not receive services until middle or high school. In conclusion, they wrote, "Title I alone cannot be expected to serve as the great equalizer. The results do suggest, however, that without the program, children served over the last 30 years would have fallen farther behind academically" (p. 324).

Less rigorous attempts to demonstrate that Title I has "worked"—that it has helped to close the achievement gap between advantaged and disadvantaged children—have been based on data from the National Assessment of Educational Progress (NAEP), a series of tests begun in the early 1970s and administered every two to five years. By that yardstick, Hispanic and black children (groups disproportionately served by Title I) have made substantial gains in both reading and mathematics during the past quarter century. On nearly every test, the gaps between minority students and white students decreased as well (see National Center for Education Statistics, 1996). Many Title I advocates have ascribed these gains to the extra resources Title I has provided to schools over the years.

There are problems with this interpretation, however. First, the NAEP data are not broken down by whether students receive Title I services or not. This leaves no way of validating the claim that Title I, rather than school desegregation, improved teaching methods, or even better nutrition or sleeping habits, is responsible for minorities' achievement gains. Second, NAEP scores for both Hispanic and black students have suffered a significant but inexplicable decline since the late 1980s. The result is that, with shocking uniformity, the achievement gap between minorities and white students has again widened on nearly every test and at nearly every age level in recent years. Should we hold Title I responsible for these setbacks as well as the earlier gains? Probably not, which is why decisions specific to Title I's future should be informed primarily by the data from *Prospects* and *Sustaining Effects.*

Still, it would be unfair to dismiss the argument that Title I deserves some credit for the improvements in minority achievement. A valid if unscientific case can be made that, by focusing educators on the problems of disadvantaged children, Title I sparked a cultural shift within public education. Whereas previously educators may not have seen raising minority achievement as a part of their mission, whether because of racism or low societal expectations, passage of Title I firmly established a national commitment to the education of *all* children. Today, in a Title I school, every teacher knows what the purpose of Title I is, and therefore it is her purpose too. Today more ink is spilled in the pages of liberal, mainstream, and conservative publications on the issue of how to fix high poverty schools than ever before. To the extent that Title I helped to bring about this welcome shift, it may have had benefits that cannot be measured.

TITLE I TODAY

Although the 1994 reauthorization represented a major philosophical shift, in practice the results have been mixed. Many states have been criticized for their vague, unchallenging content standards, and most states have been slow to develop the criterion-referenced tests that the law requires. The U.S. Department of Education, meanwhile, has only required states to develop content standards in two subjects—reading and math. Some Title I advocates accuse the department of merely rubber-stamping most states' Title I plans, even if they have not fully complied with the law.

In terms of accountability, the overwhelming majority of states are still using the ineffective program improvement process (for a fuller accounting of the shortcomings in the U.S. Department of Education's Title I regulations and in state plans, see Piché, 1998). Of the 11,000 schools that were identified for program improvement by the Department of Education in 1996, over 5500 were in the program for at least two years and nearly 1000 were in the program for at least four years (Rees, 1999a).

The overwhelming majority of Title I schools are still targeted-assistance schools, but the number of schoolwide programs has grown from about 3,000 in 1993 to about 16,000 now (Hoff, 1998). States have embraced the schoolwide option to varying degrees. New York, for instance, still had only 380 schoolwides and almost 3,000 targeted-assistance schools in 1996, whereas Texas had more than doubled its number of schoolwides and almost halved its number of targeted-assistance schools by then (Blank, Manise, & Brathwaite, 1997, pp. 74, 98).

Despite Title I's flexibility, there is remarkable uniformity in how the schools use the money. Between 70 percent and 80 percent of all Title I dollars are spent on salaries for extra staff (Puma et al., 1997). Of them, about half are instructional aides, 80 percent of whom do not hold a bachelor's degree (U.S. Department of Education, 1993). In targeted-assistance schools, Title I staff tend to tutor students in a pull-out setting for about thirty minutes a day, five times a week (Puma et al., 1997). Schools that don't use pull-outs tend to use instructional aides to help Title I students in their classrooms. Most schoolwide programs use their additional funding to hire a few extra teachers, mostly to reduce class sizes.

There have been some successes. Some states have designed accountability systems that seem to work, and they provide a blueprint for how other states should proceed in designing their own. Texas has had an accountability system in place since the early 1990s. Since then, scores on both the Texas state assessment and the National Assessment of Educational Progress have risen impressively.

In Texas one can find the promise of standards-based reform, together with assessments and accountability. Earlier this decade, Texas adopted standards and, more importantly, the Texas Assessment of Academic Skills (TAAS), a yearly series of tests that almost all students must take. Schools receive one of four ratings—"exemplary," "recognized," "acceptable," or "low-performing"—based on their students' passage rates on the tests, attendance, and dropout rates. To achieve "recognized" status, at least 80 percent of all students in a school, as well as 80 percent of the students in each of five demographic subgroups—black, Hispanic, white, Asian, and economically disadvantaged—must pass the TAAS. When Congress required states to develop standards and assessments aligned to the standards, it had Texas in mind. "If you implemented the law as written, it should look like Texas's," says a Democratic House aide.

So far, no other state has approached the breadth and rigor of Texas's accountability system. Almost all states have adopted standards, but most still use commercially available, norm-referenced tests such as the Stanford 9 or the California Achievement Test. Few states disaggregate their test scores by racial or economic groups to ensure that schools are teaching all their students. Even fewer rate their schools based on performance, an integral part of any meaningful accountability system.

It is highly doubtful whether a significant number of states will adopt a system like Texas's. Most states have tended to set low standards relative to external measures of educational achievement, such as students' scores on the National Assessment of Educational Progress. For instance, in the NAEP's fourth-grade reading assessment in 1994, 35 percent of Wisconsin's students scored at the "proficient" level—the level at which the NAEP governing board considers a student prepared for his grade level. *Ninety* percent of the state's students met the state's standard in reading in 1996. Georgia had 26 percent of its students score at the NAEP's "proficient" level in 1994. Yet on its own reading test, 67 percent of students met the state's standard in reading in 1996. Louisiana and South Carolina had even wider discrepancies. The setting of low standards by many states, along with the states' foot-dragging in developing assessments and accountability systems, suggest that although the 1994 reauthorization held much promise, the reality will continue to fall far short of what advocates and legislators had in mind. In fact, a thorough review of state plans and the Department of Education's regulatory guidance by the Citizens' Commission on Civil Rights found that state officials "have failed to heed the call of the new law to ensure that poor and minority children reap the benefits of standards-based reform" (Piché, 1998, p. 4).

NEXT STEPS

Today, five years after the last reauthorization, few states have developed anything approximating an effective accountability system based on ambitious academic standards. And since Title I's inception, schools have continually answered calls for fiscal and academic accountability by adopting self-protective yet ineffective practices.

Today's most widely touted solution is a continuation of standards-based reform, perhaps with an even more activist federal government. This option, preferred by most Title I advocates, means speeding the development of assessments, removing the congressional ban on federal evaluation of state content standards, requiring states to disaggregate test scores by race and income, and forcing states to develop accountability systems much like Texas's.

Other proposals would have the federal role grow even larger. Kati Haycock of the Education Trust, a Washington-based advocacy group, suggests withholding funds from schools that use uncertified instructional aides and giving districts incentives to place the best teachers in the worst schools. Robert Slavin (1997) of Johns Hopkins University thinks the solution is to encourage schools to adopt proven, whole-school instructional programs such as his own Success For All, Yale professor James Comer's School Development Program, or one of the models developed under the New American Schools initiative. The federal government could conduct field research on these programs, certify effective ones, and require that Title I schools adopt one of them. Stanley Pogrow of the University of Arizona, on the other hand, believes that the most effective Title I strategies are supplemental or pull-out programs that deliver intensive tutoring in reading and math to at-risk children. Such programs as Reading Recovery and his own Higher Order Thinking Skills (HOTS) would fit this model, and the federal government could encourage their use as well (Pogrow, 1992).

The example of Texas shows that the standards-based approach can work—in a very limited sense. It can, over the course of a half-decade, slightly boost scores at the elementary school level on tests of basic skills in reading and math. This can happen in a state where top elected officials and the state education agency strongly support the system and have the political will to ride out criticism. But Texas, as of yet, has seen little improvement at the middle- or high-school levels. And it is hard to imagine a system like Texas's arising in a state like California, where teachers' unions wield great power and the state department of education does not have to follow the governor's policies. The fact that, more than a decade after President Bush's 1989 education summit, only a few states have established reasonably effective accountability systems would seem to justify this pessimism.

What we truly need is a system in which schools make decisions such as adopting a Reading Recovery or Success for All program, or providing after-school or summer school tutoring, not because government authorities instruct them to, but because they represent the best ways to raise student achievement and thereby please the families they serve.

A system in which parents receive portable Title I grants to purchase supplemental education services from licensed providers would accomplish this. For the problem of Title I has never been that the federal government was too lenient in its regulation of how schools spent federal funds. The problem has always been that schools receive Title I dollars whether they have designed effective compensatory programs or not. Unless that fundamental structure is changed, schools will have little incentive to do the extra work necessary to find effective practices and adopt them.

Portable Title I Grants: A Closer Look

The idea of turning Title I into portable grants was proposed by Diane Ravitch in an article in the Winter 1999 issue of the *Brookings Review*. She suggested that Title I be converted into a portable entitlement that would follow the eligible student to the school or tutor of his family's choice. These choices would include public schools, private schools, and private tutoring firms such as Sylvan Learning Centers.

Shifting the basic funding strategy away from districts and schools and toward individual students would address two distinct problems with Title I: that it is not producing results for the students it serves and that it does not serve all needy children.

Portable grants would give disadvantaged families a wider range of choices for their children, and the competition for students who carry extra funds with them would raise the quality of services provided for all. Public schools would be free to attract parents by designing after-school, before-school, or summer school programs that provide supplemental services to children at risk of educational failure. Or they could convince parents to spend their Title I funds on improving the entire school. Anyone who thinks Title I schools would lose substantial funding in such a competitive system is simply conceding that, after thirty years of running Title I programs, schools still have not developed effective compensatory programs. If so, they deserve to lose the funding.

Disadvantaged families could also choose to keep their children in public schools but use their Title I funds to purchase tutoring services from outside providers. Private tutoring firms have already demonstrated their eagerness to provide supplemental services to disadvantaged children. A number of school districts presently contract with private companies like Sylvan Learning Systems and Kaplan Educational Services to provide remedial services for disadvantaged students. "Sylvan at School" programs enroll nearly 80,000 students in 850 public and nonpublic schools, often serving the students who are furthest behind (Snell & Anderson, 2000). In 1998, the Los Angeles Unified School District contracted with Kaplan to conduct after-school programs in reading, math, language arts, and science on-site at twenty-five public schools. Federal funds would thus give poor children access to the same kinds of supplemental services that better-off children who struggle in school have long enjoyed.

Portable grants are appealing for other reasons as well. As school choice options have expanded in recent years, federal education policy has not kept pace. Since Title I funds are directed to schools and not to students, disadvantaged children who take advantage of public school choice may lose access to Title I services if they transfer from a school which is eligible for Title I funds to a school which is not eligible. Charter schools have faced serious difficulties in getting access to Title I funds even though they enroll significant numbers of disadvantaged children (Finn, Manno, Bierlein, & Vanourek, 1997). While private school students who live in the areas served by Title I schools are entitled to receive equitable Title I services, few private school students are served, and the services provided are often inadequate. Portable Title I grants which accompany children to the schools of their parents' choice would eliminate these problems.

Shifting control of Title I dollars from schools to parents will force ineffective schools to change their ways or face a loss of funds. Many schools will have to think about attracting and pleasing parents and students for the first time. More people and organizations may be inspired to create new education options for poor children and different children may benefit from different kinds of assistance. For this education marketplace to thrive, it is essential that good information is available about the effectiveness of different alternatives, so any provider of compensatory education must be required to make its methods and its results public. Anyone concerned about the ability or motivation of poor parents to take action on behalf of their children's education should be reassured by the tremendous show of interest in partial scholarships to private schools among poor parents in response to offers of these private vouchers across the country.

The complicated formulas that presently determine how many Title I dollars are sent to school districts and then on to individual schools have many unintended consequences. Chief among them is that four million children living in poverty receive no Title I services because the schools they attend are not beneficiaries. Of the eleven million students who are served by Title I, only half live below the poverty line (Rees, 1999). How can this be?

Title I funds automatically go to every school district with at least ten disadvantaged children or whose enrollment is at least 2 percent disadvantaged, which means that Title I funds find their way into nearly every school district in the nation. Once Title I funds reach school districts, another set of regulations kicks in. Districts must rank their schools by poverty rate and serve them in order of highest to lowest until the funds run out. This procedure can lead to unusual distribution patterns. In New York, for instance, one study found that 63 percent of schools whose poverty rates were below 10 percent received Title I funding during the 1992-1993 school year. Meanwhile, nearly 15 percent of the schools whose poverty rates ranged from 50 percent to 60 percent received no funds, presumably because they were located in districts with so many high-poverty schools that there were not enough funds left to cover all of the schools in the 50 percent to 60 percent poverty range (see Carmichael, 1997). In Houston, only children in schools in which 70 percent of the students are below the poverty line receive Title I services.

These shortfalls arise in part because funding for Title I is currently much lower than the amount necessary to provide the maximum payments authorized under the basic grant allocation formula. It would cost approximately $24 billion to fully fund these grants; the 1999 appropriation is roughly one-third of that (Riddle, 1999). Converting Title I into portable grants would ensure that poor children receive services no matter what school they attend. Existing Title I formulas create an incentive for schools to maintain high concentrations of low-income pupils in order to remain eligible for Title I funds. Portable grants allow students to leave these high-poverty schools without losing services.

For portable grants to work, they would have to be large enough to purchase the needed services. Today, the level of Title I spending is approximately $600-650 per pupil served (Riddle, 1999). This figure is low because of the enormous growth in the number of students served by the program since 1994. Before the large increase in the number of schoolwide programs after the 1994 reauthorization, there were only six million students served by Title I (versus eleven million today, half of whom are not poor).

Anyone designing a portable Title I grant program will have to decide which children should be eligible for the portable grants, and in particular whether the grants should go to children living in poverty, to children who are performing poorly in school, or to poor children who are performing poorly in school. Today, Title I funds are distributed to schools based on the incidence of poverty, but schools choose which children to serve based on achievement levels, not poverty.

One way of pumping up the size of the grants would be to limit Title I to serving only poor children and only those in the early grades. Title I services were historically targeted at children in Grades one to three, mostly because these children have the most to gain from Title I. Much less is known about successful intervention after Grade three, and older students are typically so far behind that it is very difficult to catch up (Farkas & Hall, 2000). The changes that were part of the 1994 reauthorization shifted the balance away from the early grades; now only 37 percent of students served by Title I are in Grades one to three (Orland & Stullich, 1997; U.S. Department of Education, 1999). If the $8.3 Title I appropriation from 1999 were targeted to the lowest performing one fifth of students in Grades one through three, the portable grants would be worth $3,952 per child (Farkas & Hall, p. 87).

Portable Grants in the Real World

Portable Title I grant proposals have begun to appear with some frequency on the national stage. The 106th Congress has already considered a proposal to provide Title I assistance in the form of portable grants. Portable grant amendments were offered during committee and floor debate on H.R. 2, the bill to reauthorize Title I, in October 1999, and a bill to authorize portable grants has been introduced by Sen. Judd Gregg (R-NH) in the Senate as S.1677 (the Child Centered Education Act).

Under S.1677, any state (or local school district, with the approval of the state) can apply to administer Title I as a portable grant. Parents of the pupils who receive the grants can use them to purchase supplementary services for their children at a public or private school or a tutorial services program. Although some of the current Title I requirements involving assessment and parental involvement would continue to apply to states offering portable grants, most requirements, and in particular, the fiscal accountability requirements, would be rescinded. States would be required to establish specific goals for improving the academic performance of eligible children and would be required to submit student performance data disaggregated by race and family income annually. The amendment offered in the House, H.Amdt. 542, which authorized a "pilot child centered program" was similar to S. 1677, but only ten states would have been able to participate (Riddle, 1999).

Presidential candidate George W. Bush has proposed a more limited form of portability for aid to disadvantaged children. Title I schools that fail to demonstrate improvement for three years in a row would lose their Title I funding, and parents of Title I children in those schools would be given a $1,500 grant to purchase remedial education services.

Portable Title I grants are not a pie in the sky idea. A number of school districts now provide remedial education services through tutorial service providers. Parents in some low-income schools can receive Tutorial Assistance Grants through the Reading Excellence Act, which they can use to pay for an after-school tutoring program sponsored by the school or by an outside provider. San Diego already has a measure of Title I portability; the city received a waiver from the U.S. Department of Education that allows it to provide Title I services to eligible students regardless of the schools they attend.

Portable Title I grants are an attractive option because they harness market forces to solve a problem that has stymied us for over three decades: redressing the educational disadvantages of poor students. Over the years, Title I has evolved into a complex, hybrid program that is not fulfilling its mission. Its tortuous rules and regulations have created perverse incentives at the local level and a substandard education for the most at-risk students. Nothing in the long history of Title I would suggest that more rules or different rules are the solution. Why not use Title I to empower parents and children instead?

NOTE

1. The complaints of Catholic and other religious groups were allayed by mandating that poor children in private schools be eligible for Title I funds. In doing so, Congress established the "child-benefit principle"—that Title I funds primarily benefited the child, not the religious institution, and thus could flow to sectarian private schools. In most cases, public-school teachers would provide Title I–funded help to children in private schools in the private schools themselves. In 1985, how-

ever, the Supreme Court ruled in *Aguilar v. Felton* that having public-school teachers teach in sectarian private schools represented an unlawful entanglement between church and state. The result was that many school systems required children in private schools to walk to public schools to receive help or ran Title I programs in mobile trailers located just off the private-school premises. This was enormously inefficient and costly. In 1997, however, the Supreme Court revisited the issue in *Agostini v. Felton* and ruled that public-school teachers once again could deliver Title I help in private schools. Public-school teachers have slowly begun giving help in private schools in the wake of the ruling. See Doyle & Cooper, 1988; Education Funding Research Council, 1998.

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CHAPTER 2

MAKING ECONOMICALLY GROUNDED DECISIONS ABOUT COMPREHENSIVE SCHOOL REFORM MODELS

Considerations of Costs, Effects, and Contexts

Jennifer King Rice

At-risk students are those who are likely to experience difficulties in the educational system.[1] These students are generally from minority, low income, and single-parent families, and they often demonstrate low academic achievement, poor attendance, and high retention and dropout rates. Evidence suggests that this population is growing both in terms of number and degree of disadvantage. As the number of at-risk students grows, so does the importance of devoting both attention and resources toward addressing their educational needs. It has increasingly become recognized in the education community that the needs of at-risk students must be better addressed if we are to realize the type of goals that have been set at the national, state, local, and school levels. Further, it has been argued by researchers (Levin, 1989) and accepted by the general population that we simply cannot afford to continue failing to meet the educational needs of this critical mass of students. In response to the growing concern, numerous comprehensive models of school reform have been developed to better meet the educational needs of at-risk students.

Much attention in education reform circles has focused on such comprehensive school reform models as promising alternatives for improving the effectiveness of underperforming schools serving large concentrations of at-risk students. In fact, several broad policy initiatives explicitly link compensatory school funding to the adoption of such models of school reform. At the state level, for instance, in the 1998 *Abbott v. Burke* decision, the New Jersey Supreme Court determined that the state constitutional right to a "thorough and efficient education" must include a supplemental program designed to ameliorate the deficits that poor children bring with them to school. One component of the Court's decision involves the mandate that each Abbott school adopt and implement a research-based whole school reform model, such as Success for All, designed for children with disadvantages.[2]

At the national level, in November 1997 the U.S. Congress allocated $150 million to support the implementation of research-based reforms in schools across the country. The Comprehensive School Reform Demonstration (CSRD) program provides schools with grants of at least $50,000 to support redesign by means of whole school reform. The bulk of comprehensive school reform funds flow to states and—through competitive grants—to schools interested in implementing schoolwide comprehensive reform. This amounts to $120 million in Elementary and Secondary Education Act (ESEA) Title I funds allocated by formula to states to allow current Title I schools to adopt comprehensive school reform models. An additional $25 million is allocated to support comprehensive school reform in non-Title I schools. Four million dollars goes to Regional Education Laboratories to help local schools choose, implement, and evaluate comprehensive school reform strategies, and the remaining $1 million is provided to the U.S. Department of Education to inform states and local schools about existing comprehensive reform models. Although the federal legislation identifies criteria for comprehensive school reform models, individual states are granted much discretion in determining which schools will receive funding and which models will be supported. The CSRD program is currently limited to approximately 2,500 schools that win the grants, but if the program is considered successful, Congress may extend it to focus the entire $7-billion Title I program on comprehensive school reform.

Finally, apart from policies stemming from litigation or legislation, comprehensive school reform models have been embraced on a broad scale in many challenged school systems throughout the country. For instance, Prince George's County, Maryland, has a number of schools reflecting the School Development Program of James Comer. Likewise, many of the Memphis City Schools are now Success for All (with its sister program, Roots and Wings) schools, given the district's commitment to this particular model. Examples like these can be observed in school districts throughout the nation.

The available comprehensive school reform models are many and varied. Models vary in terms of the level of education for which they are designed (i.e., elementary/secondary), the areas of the curriculum they address, and the length of time they have been in operation. They do, however, share several defining characteristics that are emphasized in the CSRD legislation. These attributes include high standards for all children, a comprehensive approach, research-based and research-tested practices, and a focus on goals, professional development, alignment, and parent and community involvement (ECS, 1998a).

Schools serving large concentrations of at-risk students that decide to (or are required to) adopt a comprehensive school reform model are fortunate to have a wide selection of alternatives. At the same time, this range of options introduces the problem of which model to choose. Many criteria may inform the selection process. School decision makers may simply adopt the program that neighboring schools have chosen or that they have heard about from colleagues. Alternatively, they may opt for a more empirically driven decision-making process and search for evidence indicating the most effective model. Yet another common path that recognizes the limited resources schools have to meet multiple, often competing demands is to choose the program that is least expensive. A final option is to draw on both types of information to identify the program that is most cost-effective, and therefore most desirable on economic grounds.

Although research has been conducted to measure the costs and effectiveness of many comprehensive school reform models, the process of combining these data to identify the most cost-effective model is far from straightforward. One complicating factor addressed in this chapter is the importance of local context in determining which model is most cost-effective. Rather than assume that there is a single alternative that is most preferable on economic grounds, the discussion recognizes that different programs may be more appropriate (i.e., cost-effective) in different types of communities. In other words, local policymakers should avoid looking for the "best" program, and rather seek out the "best fit" program for their particular community. This chapter introduces a set of context considerations that build on what is known about the cost and effectiveness of various models to inform local decisions about which schoolwide model to adopt. The central argument is that data on cost and effectiveness is a necessary but insufficient condition for making economically grounded decisions about the adoption of comprehensive school reform models.

This chapter focuses on three comprehensive school reform models that are designed to address the educational needs of elementary school students: Accelerated Schools, Success for All, and the School Development Program. Although many of the issues and concepts addressed in this chapter can be generalized to other models of school reform, the three included in this chapter were chosen for a number of reasons. All three are promising school-level initiatives that have received a great deal of attention among policymakers concerned with school reform for at-risk students. All three operate under the philosophy that all students can learn, and they share the common goal of bringing at-risk students to grade level by the end of elementary school so they can benefit from mainstream (rather than remedial) education in their middle- and high-school years. The models can be replicated, and guidelines have been drafted for this purpose.[3] All three have been in place long enough for researchers to evaluate their effectiveness. Finally, while they share similar goals and emphases, they use different approaches that can be expected to lead to differences in the costs and effects among the programs. These factors make them of interest to consider from an economic perspective.

The purpose of this chapter is twofold: (a) to review what is known about the cost and effectiveness of the three models, and (b) to take this body of knowledge one step further by introducing a set of factors that recognize context as essential in making economically grounded decisions. Such information has the potential to assist local policymakers saddled with limited resources and the responsibility to choose among competing programs for at-risk students. The remainder of the chapter is organized into five sections. The next section provides a brief description of the three models. Sections two and three present overviews of what is known in terms of their effectiveness and costs, respectively. The chapter then shifts to present a set of factors that introduce context into the discussion of which model is most cost-effective for a particular community. The final section concludes with a discussion of the implications for state and local policymakers.

OVERVIEW OF THE THREE MODELS

Table 1 presents a conceptual overview of the three models. All three models have a long history of at least 10 years, and have at least 700 practicing schools nationwide. Whereas all three models reflect the belief that every student can learn, they look to different sources to realize the goal of student success. The Accelerated Schools program looks to the community as a whole, the Success for All model places primary responsibility on the educational institution, and the School Development Program emphasizes the role of the family. Turning to the main features of the various programs, the Accelerated Schools approach reflects a site-based facilitative process focused on three guiding principles: unity of purpose, empowerment coupled with responsibility, and building on strengths. In contrast, the Success for All program is more prescriptive in what is required for implementation (e.g., reading curriculum, reading tutor program, student assessment process). The School Development Program is sometimes facil-

TABLE 1
Conceptual Overview of Three Models of School Reform

	Accelerated Schools	*Success for All*	*School Development Program*
Year Established	1986	1987	1968
Number of Schools*	More than 1,000	747	721
Primary Goal	Bring at-risk students up to grade level by the end of sixth grade; responsibility of the whole community.	All students can and should succeed; it is the school's responsibility to see that they do	Promote psychosocial development to facilitate student achievement; need to forge school-family relationships
Main Features	Three guiding principles: • unity of purpose • empowerment + responsibility • building on strengths	Schoolwide reading curriculum • Reading tutor program • Eight-week assessments	Three guiding principles: • no-fault • consensus • collaboration Three operations: • comprehensive school plan • staff development plan • monitoring and assessment
Curriculum	Emphasize reading Language stressed in all subjects English proficiency for ESL Contextualized lessons	Emphasize reading Schoolwide reading curriculum Learn through practical application	Emphasize reading and math Emphasize standard English Focus on academic core Contextualized lessons Development of whole person

TABLE 1
Continued

	Accelerated Schools	*Success for All*	*School Development Program*
Instruction	Smaller classes Cooperative learning Peer tutoring Extended-day program Avoid pull-out programs	Ability grouping for reading & math Cooperative learning Reading tutor program (1-1 pullout) Eight-week assessments Provision for pullout programs	Smaller classes Cooperative learning Peer tutoring Extended-day program Provision for pullout programs
Parent Involvement	Through governance team	Family support team • 1 parent • 2 social workers • conduct home visits • provide workshops	Through governance team Participate in school activities Attend school events
Governance Structure	Focus on process (inquiry process) Site-based management Assistance from site team as needed	Focus on structure Advisory committee • principal • program facilitator • teacher representative • social worker • Johns Hopkins staff	Focus on process and structure Site-based management Governance & management team • principal • elected parents • elected teachers • mental health specialist • support staff

Note: * Number of schools in January 1998 (NWREL, 1998) itative, as seen in the three guiding principles, and sometimes prescriptive, as evident in the three operations.

The remaining sections of Table 1 compare the models along four dimensions that are apparent throughout the literature on each. In terms of curriculum and instruction, all three models emphasize the development of reading and language skills in a contextualized manner but vary in how this is to be accomplished. The Accelerated Schools program maintains regular classroom instruction to the degree possible, advocating smaller classes and cooperative learning techniques in the regular classroom. Success for All schools prescribe a specific schoolwide reading curriculum taught to classes grouped by reading ability and include an extensive reading tutor pullout program with assessments conducted every 8 weeks. The School Development Program includes pullout programs for academic reasons (e.g., Focus Program) as well as for personal/developmental reasons (e.g., Discovery Room).

Although all three models require parental involvement, they vary in approach. The Accelerated Schools model specifies loose requirements, leaving primary discretion to communities. Success for All schools are explicit in defining parents' roles and responsibilities through the family support team. While the School Development Program specifies some requirements of parents, the general expectation is for high levels of parental participation in a variety of ways.

Finally, with regard to governance structures, the Accelerated Schools model is most focused on the process of decision making: the Inquiry Process (Hopfenberg, Levin, Meister, & Rogers, 1990; Levin, 1991). In contrast, the Success for All schools are highly focused on structure and clearly delineate the players in the decision-making process. The advisory committee, composed of a wide variety of actors, is the governing body to guide the school. The School Development Program evidences interest in both structure and process through its governance and management team.

EVIDENCE OF PROGRAM EFFECTIVENESS

A variety of studies have explored the effectiveness of the three models, making this a good starting point in reviewing what is known about the programs.[4] However, for several reasons, comparing the three models in terms of their effectiveness promises to be a task riddled with difficulty. First, there is considerable variability across (as well as within) models in terms of the specific goals pursued and how those goals are prioritized at the site level. Whereas all three programs are geared toward realizing improved performance for all students, the Success for All model is most committed to reading achievement, the Accelerated Schools model is concerned with accelerated progress in all academic subjects, and the School

Development Program emphasizes the development of the whole person within his or her community. Other goals characteristic of the programs include issues of student attendance, grade retention, discipline, self-concept, and social skills. How the different programs and sites within each program prioritize these goals can certainly affect the degree to which goals are realized, making comparisons across programs difficult.

Another concern is the level of implementation at the time of the evaluation. All three programs require some time for implementation. In fact, Levin (1991) suggests that while some effects can be detected early on, it can take 6 years for the Accelerated School model to be fully implemented at a site. Further, research has found that the programs that are more thoroughly implemented show the most significant results (Comer, 1980). Consequently, comparisons of program effectiveness should be made among programs that are, in fact, fully implemented.

One final concern is a practical one: The types of evaluations that have been conducted vary in terms of their scope, sample, outcome measures, and analytical method used. Some are experimental or matched comparison studies, using control groups to help gauge the effect of the treatment program. Others measure changes in outcomes over time or relative to the district as a whole. Some evaluations report results for specific sites whereas others sample from various sites to aid in making program-level generalizations. Some are focused on student-level effects whereas others are more concerned with program impact at the school level. A recent report by the American Institutes for Research (AIR, 1999) attempts to address the issue of variability in the methodological rigor of program evaluations by rating these and other comprehensive school reform models based on the strength and amount of evidence documenting program effectiveness.

Accelerated Schools

Several efforts have been made to summarize studies that have evaluated the effectiveness of the Accelerated Schools program. The AIR (1999) report assigned a rating of "marginal" to the evidence of positive effects of Accelerated Schools on student achievement. According to AIR, this rating "indicates that at least one study, using rigorous methodology, shows positive effects of the approach on student achievement. At least 50 percent of studies show positive effects on student achievement. Evidence that is rated marginal rather than promising may include fewer studies using rigorous methodologies, fewer studies showing significant effects, or a higher proportion of studies showing negative or no effects" (p. 3). This rating of "marginal" is based heavily on the judgment of which studies the AIR researchers deemed methodologically rigorous, a determination involving consideration of the scope of the study, the quality and objectivity of the measurement instruments, and the affiliation of the researcher.

Perhaps one explanation for the AIR marginal rating is the observation made in a recent overview of school reform models compiled by the Northwest Regional Educational Laboratory (NWREL) and the Education Commission of the States (ECS). The report explains that "no large scale, systematic evaluations that compare student achievement in accelerated schools with that in control schools have been conducted," though one such study is currently underway (NWREL, 1998, p. 12). In a paper reviewing Accelerated Schools after 8 years, Levin (1994) argues against standard assessment practices to evaluate Accelerated Schools because they fall short of capturing the kind of change that is promoted in Accelerated Schools. Most of the existing work studying the effectiveness of the Accelerated Schools model consists of case studies, qualitative observations, anecdotal reports, and smaller scale evaluations (Fashola & Slavin 1998; McCarthy 1996). In general, these studies have produced evidence of positive outcomes in terms of school climate and discipline, parental involvement, and volunteer participation (McCarthy & Still, 1993).

Success for All

The Success for All program was one of only three comprehensive school reform models that AIR researchers rated "strong" in terms of evidence of positive effects on student achievement. This rating "indicates that four or more studies, using rigorous methodologies, show some positive effects on student achievement, with at least three of such studies showing effects that are educationally (or statistically) significant. Further, only 20% of studies show negative or no effects on students. To ensure enough information for future replications, at least one study provides information on implementation as well as on effects" (AIR, 1999, p. 3).

The NWREL/ECS report states, "from the beginning there has been a strong focus in Success for All on research and evaluation" (NWREL, 1998, p. 104). In general, results from numerous evaluations show that Success for All has a positive effect. The primary emphasis of the Success for All schools is on reading achievement, and several studies have shown positive effects of the program on this outcome on student achievement (Slavin, Dolan, Wasik, Ross, & Smith, 1994), particularly for the lower-performing students (Madden, Slavin, Karweit, Dolan, & Wasik, 1993), for minority students (Ross, Smith, Casey, & Slavin, 1997), and for students in kindergarten (Jones, Gottfredson, & Gottfredson, 1997; Ross & Smith, 1994). Studies have also found positive effects of program participation on decreasing the degree to which students are retained in grade level and increasing attendance rates (Madden et al., 1993).

School Development Program

The AIR researchers rated the School Development Program "promising" in terms of the available evidence of positive effects of student achievement. The report explains, "A promising rating indicates that three or more studies, using rigorous methodologies, show positive effects of the approach on student achievement, with at least one such study showing effects at statistically or educationally significant levels. No more than 30% of studies show negative or no effects on students, and at least one study provides information on implementation. Evidence that is rated as promising, rather than strong, may include fewer studies using rigorous methodologies, fewer studies showing significant effects, or a higher proportion of studies showing negative or no effects" (AIR, 1999, p.3).

NWREL (1998) recognizes that the School Development Program has been the object of numerous studies over the past 15 years. As with the Success for All model, the School Development Program has been assessed through a number of thorough experimental design and matched comparison studies. Several studies show that the School Development Program has a significantly positive effect on aggregate student achievement gains over time relative to those realized by the district as a whole (Comer, 1980). In addition, studies have shown positive effects on the achievement of students in the School Development Program relative to those in matched comparison schools (Joyner, 1990). Positive effects have also been documented for several other outcomes such as declines in suspensions, absences, and punishments (Haynes & Comer, 1993), and increases in student self-concept (Joyner, 1990), school climate (Comer, Haynes, Bility, Emmons, & Gebreyesus, 1992), and parent-staff relations (Comer, 1988).

Summary

All three models show evidence of positive effects in terms of a number of outcomes. Nonetheless, it is not clear how to rank the models in terms of their effectiveness. Several concerns noted at the outset of this section are barriers to ordering the programs in terms of these evaluations. Namely, differences in prioritization of program goals among sites, variability in the degree to which the program was implemented at the time of the study, and differences in the types of studies yielding the reported results make it difficult to gauge relative effectiveness. More progress on assessing the effectiveness component is certainly necessary. For now it is important to recognize that all three models have shown evidence of positive effects on student achievement as well as a variety of other outcomes.

EVIDENCE ON PROGRAM COST

The literature on the three models also includes some information on their costs, albeit minimal compared with the amount and range of work that has been conducted on program effectiveness. This situation is not unique to comprehensive school reform models; rather, cost analysis plays a substantially smaller role in education evaluation in general than in other areas of public policy (Monk & King, 1993). Hypothesized reasons for the relative infrequency of cost-based evaluations in the field of education include: (a) the limited knowledge of the technical properties of the educational production process, resulting in disproportionate attention to effectiveness (to the exclusion of cost); (b) a lack of appropriate cost analysis training among educational researchers; (c) the many difficult-to-value resources in education relative to other areas of public policy; and (d) the limited generalizability of cost analysis in education due to the variability that exists across implementation sites. The first two concerns imply that researchers knowledgeable about the production processes of education and trained in cost analysis should conduct the evaluations. The second two imply an essential role for local level policymakers in providing site-specific information.

While few in number, several studies have estimated the costs of these programs, which have then been presented in other documents and materials. This section provides an overview of what is known about the costs of the three models. A summary of documents containing cost estimates of the models is presented in Table 2.

Accelerated Schools

The webpage for Accelerated Schools includes a section providing an overview of the costs associated with the program. The main component of this cost is the Basic Partnership Agreement, which costs between $13,000 and $15,000. In addition, programs need to provide 2 days of release time for all staff (4 during the first year of implementation), 25% of the support needed for a coach (which can be expected to range from $12,000 to $20,000), and 36 hours each year for all staff to attend weekly meetings.[5] The estimates presented on this webpage are identical to the NWREL/ECS catalog of school reform models (NWREL, 1998).

In a study calculating the costs of the three models in terms of both money and time, King (1994) reports that Accelerated Schools costs between $48,000 and $266,000 per year in schools serving 500 students. This translates into an annual per pupil cost ranging between $96 and $532. In addition to these fiscal requirements (resulting primarily from

TABLE 2
Existing Cost Estimates of Three Models of School Reform

	Accelerated Schools	*Success for All*	*School Development Program*
Program webpage	$13,000 -15,000/year -Basic Partnership Agreement plus: 2 days of release time for all staff 4 days of release time for all staff (Y1) $12,000-20,000 - 25% coach 36 hrs/year for weekly meetings	Varies by size, location, & need of school Sample based on about 500 students: $70,000-75,000 for Y1 $26,000-30,000 for Y2 $20,000-23,000 for Y3 Plus or minus $65 per student Costs include: Training Materials Follow-up visits Other services	$5,000 -Administration fee/district $1,000/attendee - Yale training sessions $1,000/day/person - Yale staff site visit plus travel expenses Salary of full-time program facilitator Other: Release time and travel Additional services (e.g., Essentials of Literacy and Curriculum Alignment Process)
Northwest Regional Educational Laboratory (NWREL, 1998)	Same as estimates on program webpage	Same as estimates on webpage	$15,000 - Flat fee/district Includes: Yale University 5 people to 2 week-long workshops 2 site visits by program staff member Plus: $1,000 per additional workshop part. Release time and travel expenses Full-time program facilitator (maybe .5) Additional staff as needed Professional development as needed

King (1994)	$48,000-266,000 per year (500 students) $96-532 per pupil Plus: Faculty time: 3.5 - 7 hrs/ week Principal time: 1 - 8 hrs/week Parent time: 1 - 2 hrs/week	$261,060-646,500 per year (500 students) $522-1,293 per pupil Plus: Faculty time: .5 - 1.5 hrs/ week Principal time: 1 - 2 hrs/week Parent time: .25 - 1 hr/week	$102,800-278,150 per year (500 students) $206-556 per pupil Plus: Faculty time: 1 - 3 hrs/ week Principal time: 1 - 3 hrs/week Parent time: 1.5 - 6.25 hrs/week
Barnett (1996)	$17,000-80,000 first year (500 students) $34-160 per pupil	$160,500-340,500 first year (500 students) $0-35,500 after reallocating Title I $0-71 per pupil after reallocation	$57,500-219,000 first year (500 students) $115-438 per pupil $15,000-219,000 after reallocating $30-438 per pupil after reallocation
American Institutes for Research (1999)	$27,000 for Y1 $14,000 for Y1 after staff reassignment	$270,000 for Y1 $70,000 for Y1 after staff reassignment	$45,000 for Y1 $32,000 for Y1 after staff reassignment
Center on Research for Effective Schooling for Disadvantaged Students (1992)		$900 per pupil per year	
Briggs & Clark (1997)		$50,000 (Y1) for materials and training-Staffed w/ Title I teachers and aides.	

additional staff and training needs), the program has a cost in terms of the time required of existing personnel: an additional 3.5 to 7 hours of faculty time, 1 to 8 hours per week of principal time, and 1 to 2 hours per week of parent time.

Barnett (1996) estimates the first year cost of a basic Accelerated Schools site of 500 students to be $17,000, or $34 per pupil. He also adjusts these numbers to calculate an upper bound estimate of $80,000, or $160 per pupil.

Most recently, a report on alternative comprehensive school reform models by AIR (1999) estimated the first year costs of Accelerated Schools at $27,000. This figure dropped to $14,000 once existing faculty and staff were reassigned to support the program.

Success for All

The Success for All webpage includes a section devoted to outlining the costs of the model by year for the first three years of implementation.[6] While cost can be expected to vary by size, location, and level of need in the school, average costs of a program serving a school of 500 students amount to $70,000 to $75,000 during the first year, $26,000 to $30,000 during the second year, and $20,000 to $23,000 during the third year. The materials suggest that these figures be adjusted by $65 per student for schools larger or smaller than the 500 baseline. These costs include training, materials, follow-up visits by program staff, and other services. The cost information presented in the NWREL/ECS catalog on comprehensive school reform models is identical to that available on the webpage (NWREL, 1998).

King (1994) also estimated the costs of the Success for All program and reported a fiscal amount ranging from $261,060 to $646,500 per year in schools serving 500 students. This translates into an annual cost of $522 to $1,293 per pupil. In terms of the additional time required of existing staff in Success for All schools, King estimates a need for .5 to 1.5 hours per week for teachers, 1 to 2 hours per week for principals, and .25 to 1 hour per week for parents to support this model.

Barnett (1996) presents several scenarios to estimate the costs of the Success for All schools based on the percent of students in the school qualifying for Title I. At the low end, in schools in which 25% of the students qualify, the cost of the program is estimated at $160,500, which would be offset by $125,000 in Title I funding to equal a net cost of $35,500, or $71 per pupil. At the high end, in schools in which 75% of the students qualify for Title I funds, the total cost of the Success for All program is $340,500, which becomes zero after reallocating the school's $375,000 Title I budget.[7]

The Center for Research on Effective Schooling for Disadvantage Students (1992) estimated the annual cost of the Success for All model at $900 per pupil. Briggs and Clark (1997) estimated the first year cost for materials and training at $50,000, with staffing to come from the pool of Title I teachers and classroom aides.

Most recently, the AIR study estimated the first year costs of Success for All schools to be $270,000 per school, which would translate into $70,000 after reassigning existing staff to support the program (AIR, 1999). These figures are consistent with those presented on the Success for All webpage (and NWREL/ECS catalogue) as well as those generated through the King (1994) study.

School Development Program

Cost estimates provided on the School Development Program webpage include the following: a $5,000 administration fee per district, a $1,000 fee per attendee for training sessions at Yale University, a $1,000 fee per day per person for Yale staff visits to the school site (plus travel expenses), and the salary of a full time program facilitator. Additional costs include release time and travel, and additional services that might be needed, particularly during the early stages of implementation (e.g., Essentials of Literacy and Curriculum Alignment Process).[8]

The NWREL/ECS report presents the cost of the School Development Program as a flat fee of $15,000 charged to the school district (NWREL, 1998). This fee includes five members of the school staff attending two weeklong workshops at Yale University and two site visits by a program staff member. In addition, districts are required to pay $1,000 for each additional workshop participant, and to provide release time and travel expenses, the salary of a full-time (or possibly half-time) program facilitator, additional staff as needed, and additional professional development as needed.

King (1994) estimated the fiscal costs of the School Development Program to be between $102,800 and $278,150 annually for a school of 500 students. This amounts to a per-pupil cost of between $206 and $556 per year. In addition, the program requires 1 to 3 hours of faculty and principal time per week and 1.5 to 6.25 hours of parent time each week.

Barnett (1996) estimated the first year cost of a basic School Development Program for a school of 500 students at $57,500, or $115 per pupil. After schools take advantage of opportunities to reallocate existing resources to support the program, these costs drop to $15,000 per school and $30 per pupil. He presents an upper bound of $219,000, or $438 per student, assuming no reallocation opportunities.

The cost estimate presented by AIR (1999) for the School Development Program is $45,000 during the first year of implementation and $32,000 after existing staff positions have been reallocated.

Summary

Several observations surface from the literature documenting the costs of the three models. One finding is that the actual number of studies estimating costs is quite small, particularly relative to that assessing the effectiveness of the programs. This is even more striking when one observes that many of the materials presenting costs are clearly based on the same analyses, as evidenced by the identical presentations. For instance, it appears that only three studies estimate the costs of the Accelerated Schools model. Others then re-present the findings from these original three.

Another interesting observation relates to the range of cost estimates presented for each model. This variability results from several factors. Variation in the purpose and scope of the cost study results in different estimates. For instance, the program webpages and the NWREL/ECS report tend to present costs in terms of the resources, primarily financial, that the district will have to produce during the first year to begin a program. In contrast, King (1994) presents the total societal costs of the programs including all opportunity costs—both time and money—associated with the programs, with no adjustment for the reallocation of existing resources to support the program. The AIR (1999) study estimates total cost as well as the remaining cost after existing staff is reallocated. While all of these approaches to cost analysis are legitimate and address important policy questions, these differences in emphasis and design yield differences in the magnitudes of the estimates.

In comparing the three programs in terms of cost, by all estimates, Success for All is the most costly in terms of the fiscal resources required to support the program. The School Development Program appears to be the next most costly, followed by Accelerated Schools. However, the Accelerated Schools require the most time of existing personnel, which could translate into budgetary expenditures under some circumstances. The School Development Program requires the most time of parents.

IDENTIFYING THE BEST-FIT MODEL: THE IMPORTANCE OF CONTEXT

Thus far, evidence on the cost and effectiveness of each of the three models has been presented. A next logical step would be to combine these estimates to produce a cost-effectiveness ratio for each model as grounds for selecting the program that costs the least per unit of effectiveness. However, these estimates are just that and, to the degree that sites vary in terms of the conditions and assumptions used to generate these estimates and the productive stock of resources they have available, information on cost and effectiveness must be considered in the context of local factors (Rice, 1998). For instance, the Success for All webpage explicitly states that the costs of a program vary according to school size, location, and extent of need. Likewise, King (1994) emphasizes the importance of locating the cost analysis within the community context to make decisions about best fit.

Rather than assume that there is one alternative that is the most preferable in all communities on cost-effectiveness grounds, this analysis recognizes that different programs may be more appropriate (cost-effective) in different types of communities. In other words, the following discussion is based on the assumption that there is not necessarily a best program, but rather a best fit for a particular community. This section of the chapter considers evidence on program cost and effectiveness in light of community and environmental circumstances with the goal of assisting local policymakers in identifying that fit. Four broad considerations frame this discussion: (a) recognizing time and money as resources, (b) ensuring that there is an adequate infrastructure in place to support the reform, (c) assessing the degree of alignment between the school community and the reform model, and (d) recognizing the range of available resources to support the model.

Recognizing Time and Money as Resources

Perhaps the most important factor to recognize in making decisions about the level of support needed for a program is that both money and time are valuable resources and need to be considered as such. Some comprehensive school reform models that seem relatively inexpensive in terms of dollars may involve important shifts in the use of time. For instance, the Accelerated Schools model is the least costly, by most estimates, in terms of additional dollars required. However, the full implementation of the model requires substantial amounts of time of existing personnel. To the degree that such time is available either through slack in the schedule or through the in-kind contributions of the teachers and school personnel, this will not translate into additional costs to the budget. However, if such "costless" time is not readily available (or becomes unavailable over time), the financial cost of the program will increase.

This concern becomes even more complex when shifting to parent time because of the difficulty of assigning a market value to the time of parents.

Even if a market price could be assigned, communities can be expected to vary in terms of the value of that time. A parent's time can be associated with high or low opportunity costs, depending on the individual (e.g., education level) or the community (e.g., employment opportunities). If we can reasonably assume that parents with high and low opportunity costs are distributed evenly across different types of communities, then we need not be concerned with this variation. However, this assumption is far from representative of reality. For some of the models, this is more of an issue than for others. For example, the School Development Program depends on a significant amount of parental involvement, which requires a serious time commitment. In contrast, while parental participation is a fundamental component of the Success for All schools, the magnitude of the time requirement is far less than in the other models. Models relying heavily on parental participation must ensure that the level of commitment exists to support the model. In some cases, substitutions may be possible at a cost (e.g., if parents are needed as cafeteria workers), but in others cases substitution is not feasible (e.g., parent workshops on assisting students with homework) and an undersupply of parent time could undermine the model altogether.

The total opportunity cost of a program includes the value of the next best use of all resources devoted to the intervention. Although the utility of total opportunity cost estimates may be less apparent to policymakers interested in budgeting, the nonmonetary components of the opportunity cost are essential considerations in thinking about the potential costs of a program. In the absence of opportunity cost estimates, important resource requirements could be overlooked. Likewise, a model that seems relatively inexpensive one day (due to enormous in-kind support such as donated time) can become extremely expensive down the road.

Ensuring an Adequate Infrastructure

In considering the adoption of any policy alternative, it is important to recognize not only the direct costs associated with that intervention but also the nature of the infrastructure that needs to be in place if the intervention is to work. One recent policy example is the California class size reduction program. This reform initiative set out to reduce all classes in grades K–3 across the state.[9] Fiscal resources were available to support the hiring of new teachers (more than $900 million for the first year), but a limited supply of two other important resources complicated the implementation effort: (a) qualified teachers to assume the new positions, and (b) adequate facilities to accommodate the dramatic increase in the number of classes. While formal evaluation of this program is currently underway, it is reasonable to surmise that the shortage of qualified teachers and adequate classroom space has the potential to seriously undermine any positive effects that might be expected to result from the investment in smaller class sizes.

It is essential to consider the infrastructure required to support comprehensive school reform models before adopting one, since this may add substantially to the total price tag of an approach. At least five infrastructure issues seem central to decisions about the three models discussed in this chapter: flexibility of time, adequate professional development opportunities, quality leadership at the building level, district support, and an overall climate of collaboration (Haynes, 1998; Swanson, 1997).

Flexibility of time is essential in all three models, but for different reasons. In Accelerated Schools in which the emphasis is on an evolving process of change (Levin, 1991), teachers must have time to meet together both during and after school hours. This is likely to require new scheduling alternatives to free teacher time for these activities. Likewise, the School Development Program requires time for teachers to acquire knowledge necessary to support the school (e.g., child development theory) as well as to interact regularly with students and their parents. In fact, time constraints have been cited as a factor limiting the effectiveness of the teacher reform efforts at one urban School Development Program site (Bickmore, 1998). The Success for All model requires flexibility in the way the school day is scheduled since reading classes meet for 90 minutes each day.

Professional development is also a central component, even the cornerstone, of comprehensive school reform (Haslam, 1999). In fact, this is one of the defining characteristics of comprehensive school reform models cited in the CSRD legislation. All three models involve training costs that can be quite substantial during start-up years. In addition to the assistance provided by program representatives to teach the model, schools adopting these models must commit to providing high-quality, intensive, ongoing professional development opportunities for teachers and administrators. This stands in contrast to typical approaches to professional development that often consist of isolated workshops without follow-up or interaction among teachers (ECS, 1998a; Rice, 1999). Haslam (1999) provides a guide for districts to use in creating a professional development infrastructure for whole-school transformation; in the absence of such an infrastructure, he argues, schools are not well positioned to realize such fundamental change. In Accelerated Schools, professional development focuses on the inquiry process that guides school–community decision making (Brainin, 1997; Levin, 1991; Peters, McBride, & Stuessy, 1996). Professional development is essential in the School Development Program since teachers must possess an understanding of child development (Haynes, 1994). In fact, one study reports that the fundamental design flaw in the School Development Program in one community is that the participants attempted to

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implement a program without access to the underlying knowledge base of child development research and theory (Neufeld, 1995).

School-level leadership is a third type of infrastructure that has been documented as a pivotal factor in realizing successful comprehensive school reform. In particular, Accelerated Schools emphasize the need for the building principal to pay conscious and constant attention to explicitly communicating a "vision of the school" and "powerful learning" (Swanson, 1997). This need for leadership stems from the central role that unity of purpose plays in these schools, placing additional responsibility on the principal in articulating and exemplifying that purpose. The role of the principal has also been highlighted as an important factor in realizing success in the School Development Program (Emmons, Hagopian, & Efimba, 1998).

In addition to support at the building level, district support is a central component of the infrastructure that can affect the cost and effectiveness of comprehensive school models. Research has focused on the importance of district support (Kuo, 1998). Driver, Thorp, and Kuo (1997) emphasize the need for a cultural match between a district and its schools in order to promote effective Accelerated Schools. Likewise, in their study of New American Schools designs in Memphis, Tennessee, Stringfield, Datnow, Herman, and Berkeley (1997) recognized the importance of top-down district support for a variety of school-based reform models.

Finally, an overall climate of collaboration is key to successful implementation of these models. This is most apparent in terms of the parental participation demands of Accelerated Schools (St. John, 1995) and the School Development Program, which identifies adult collaboration as the foundation for educational progress in one school (Woodruff, Shannon, & Efimba, 1998).

Fostering Alignment Between the Reform Model and the School Community

As schools and school systems consider the array of comprehensive school reform models, they must do so with their own circumstances in mind. Although the term "best practice" has become a widespread mantra for approaches that work, this may not be the most productive way to think about policy alternatives for schools. Rather, it may be that schools need to consider an array of "promising practices" (as identified in the research) and determine which of those qualify as "best-fit practices" for them. This determination of best fit is likely to depend on local circumstances including specific needs (e.g., high concentrations of ESL students) as well as available resources (e.g., money, time, volunteers). In order for a promising practice to qualify as the best fit for a particular educational community, there must be some alignment between the practice and the community. Educational communities interested in affiliating with a reform network must decide which program to adopt based on a variety of issues: goals, resource requirements, degree of flexibility, professional development requirements, available technical assistance, and so forth.

Much has already been said about the need for productive parent and volunteer resources to support some components of the models. In addition, the infrastructure requirements described above can be interpreted in light of the best-fit concept; different models require different sorts of infrastructures. Another way to think about alignment is in terms of the needs of the community and the demonstrated impact of the programs. For instance, the Success for All model has been shown to be an effective intervention for improving the reading performance of students who speak English as a second language (Slavin & Madden, 1995). Programs shown to be successful in terms of special education students include the Success for All model (Ross, Smith, Casey, & Slavin, 1995; Slavin, 1996) and the School Development Program (Slavin, 1996). Finally, the School Development Program has been argued to be an effective intervention to buffer students from violence outside schools and prevent violence within schools (Haynes, 1996). Schools and school systems that have high concentrations of these sorts of student or community characteristics may be wise to consider programs that have been shown to be effective under such circumstances. This is the notion of alignment.

One way that comprehensive school reforms have tried to ensure at least some level of alignment or commitment is through a requirement that a certain percentage of the school staff "buy in" to the program. The Success for All model requires that at least 80% of the school's professional staff vote by secret ballot to adopt the program (NWREL, 1998). The Accelerated School model has even stricter requirements: 90% of the school community, including instructional and noninstructional staff as well as a representative sample of parents and district personnel, must agree to adopt the model. Students are also involved in the deliberation process. The School Development Program does not require a formal vote, but both the school and the district need to make specific commitments to the program (NWREL, 1998). These sorts of requirements aim to foster a complementary relationship, or some degree of alignment, between the philosophy of the program and the aspirations of the school and community.

Recognizing Multiple Sources of Support

A final local context issue that must be part of the deliberation process in making economically grounded decisions among the alternative models of comprehensive school reform is the set of available sources of support.

While the total societal costs of these models of school reform can be quite sizeable based on the estimates that have been generated to date, this does not imply that all of these costs require additional fiscal resources in the system. At least three strategies can be used to support comprehensive school reform models with little or no additional fiscal resources.

First, many of the resource requirements can be met through reallocating existing resources. School systems should be encouraged to scrutinize current spending patterns and consider ways to reallocate resources from ineffective existing practices to support more promising policy alternatives. The AIR (1999) report acknowledges the degree to which costs can be expected to drop after reassigning current staff to fill key positions in the model. This adjustment decreases the overall cost of the Success for All by almost 75%, the cost of Accelerated Schools by almost 50%, and the cost of the School Development Program by about 30%. However, reallocation of resources through the reassignment of current staff is not without difficulties. This process often involves "eliminating jobs—and perhaps the people who performed them" (Odden , 1999, p. 14). Options for handling such shifts in personnel include finding new appropriate assignments for the individual or retraining personnel so that they can effectively perform responsibilities associated with the new positions. In either case, district, state, and federal regulations must be carefully monitored to ensure that spending is in compliance with any restrictions placed on the funding.

A second alternative is to draw on existing Title I resources, including both dollars and personnel, to support comprehensive school designs. Schools that have at least 50% of their students qualifying as low-income can use Title I funding for schoolwide programs. This provision opens the door for many schools serving at-risk student populations to adopt and support comprehensive school reform models with Title I funds. Similarly, other compensatory dollars that flow from the state or federal levels may be considered potential pools to support reform models. Funding is available from a variety of sources, and a key to crafting the most productive intervention is to explore these sources and know how they can and cannot be used.

Finally, school communities should work to leverage support from sources other than education budgets. Many opportunities for in-kind contributions exist, and schools should promote the kinds of collaboration that would attract additional resources from parents, community members, businesses, and other noneducation government agencies.

CONCLUSIONS

This chapter set out to review what is known about the costs and effects of three schoolwide reform models and to introduce a set of factors to frame the decision-making process in a local context. In summary, all three models—Accelerated Schools, Success for All, and the School Development

Program—have been shown to be effective, but these effects vary in terms of the outcomes assessed and the particular populations that are affected. On the cost side, all three models involve substantial costs, particularly when considering total societal cost estimates. But to the degree that communities have productive and available resource reallocation opportunities, these costs can be adjusted to substantially lower magnitudes. Finally, the costs and effects must be considered in light of the context of the local community to identify the reform model that is the best fit on economic grounds (i.e., most cost-effective). Four issues framed this discussion: recognizing time and money as resources, ensuring that there is an adequate infrastructure in place to support the reform, assessing the degree of alignment between the school community and the reform model, and recognizing the range of available resources to support the model.

This chapter emphasizes the importance of such contextual factors in making economically grounded decisions about alternative schoolwide reform models. Although little attention has been given to estimating costs relative to effectiveness, even less work has been conducted to guide local policymakers in efforts to decide among models and find innovative ways to support the resource requirements they present. The types of considerations mapped out in this chapter stem from the literature describing and evaluating the three models. Other factors may also be important, particularly as efforts are made to scale these interventions up to more macro levels.

Based on the recent education policy trends, it is reasonable to suspect that comprehensive school reform models will continue to play an important (and perhaps growing) role in the discussions and resulting policies focused on better meeting the educational needs of at-risk students in U.S. public schools. Given the importance of local context in determining which model is most cost-effective for a particular school community, important responsibilities emerge for federal, state, and local policymakers as well as for program designers in guiding local decisions about which model to adopt. Consider a few examples. Federal government and program designers could support important research on the costs and effectiveness of comprehensive school reform programs (these three models as well as others). The recent review conducted by the American Institutes for Research (AIR, 1999) is certainly a promising start, but one of the most important findings of that analysis is the lack of high-quality evaluations of these programs. Further studies that outline the full range of costs—monetary and non-monetary—are essential to provide information on all of the resources needed to support the models. More work clearly needs to be done in this area.

In addition, state and local policy makers are well fit to collect and disseminate to schools information on the requirements of the various programs in terms of time, money, and the general infrastructure necessary for program implementation. Further, these levels of authority may also collect data and maintain databases complete with information on costs

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and effectiveness on the schools in their jurisdictions that have adopted various comprehensive school reform models. Finally, state and district officials are well positioned to provide technical assistance to help schools considering the different models identify the best fit.

These types of federal, state, and district activities recognize that making economically grounded decisions about which model to choose depends on local context. As the number of policies requiring the adoption of schoolwide reform models continues to grow across states and districts throughout the nation, so must the support for schools saddled with the responsibility to choose among the many different options.

NOTES

1. This chapter was prepared for presentation in May 1999 and revised in March 2000. Some specific information, such as Web addresses, may not be current.

2. See the recent article in *Education Week* (Hendrie, 1999) describing the progress that has been realized to date in adopting whole school reform policies in New Jersey.

3. For guidelines in implementing Accelerated Schools see Hopfenberg, Levin, & Associates (1993). Guidelines for implementing Success for All schools are provided by the Center for Research on Effective Schools for Disadvantaged Students (1992). The School Development Program guidelines are described in a series of videotapes "For Children's Sake: The Comer School Development Program."

4. This section does not attempt to conduct a comprehensive review, but rather presents the findings of several broad reviews as well as selected examples of studies that demonstrate specific types of effects.

5. The cost information provided on the Accelerated Schools webpage can be found at the following Internet address: www.stanford.edu/group/ASP/training.cost.html.

6. The Success for All webpage cost information can be found at the following internet address: www.successforall.net/costs.html.

7. Barnett also estimates the cost of the preschool component of Success for All, which is not included in the estimates presented here for comparison purposes.

8. This cost information can be found at the following Internet address: www.info.med.yale.edu/comer/overview2.html.

9. See California Legislative Analyst's Office (1997) for a description of the California Class Size Reduction Program.

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CHAPTER 3

DOES TITLE I MONEY MATTER?
Federal Compensatory Funding and Student Achievement

Francis X. Shen

Federal funding for public schools accounts for only 7 percent of total public school expenditures in the United States, yet the role of the federal government in the public education system is a heavily debated issue. Central to these discussions is the issue of what the federal government should and should not do to help at-risk students, generally low-income students attending low-performing public schools in impoverished communities. Since 1965, when President Johnson established the Elementary and Secondary Education Act (ESEA), the federal government has used Title I of ESEA to engage in a mission of addressing "the greater educational challenges facing high-poverty communities by targeting extra resources to school districts and schools with the highest concentrations of poverty" (U.S. Department of Education, 1999, p. 7).[1] With over $8.5 billion appropriated to Title I in 2000, it is still the single largest federal program for primary and secondary (K–12) education, accounting for 37 percent of federal K–12 spending (U.S. Department of Education, 2000). Title I is currently in the process of being reauthorized; therefore it is an appropriate time to look at the program's cost-effectiveness to date. Even though the U.S. Department of Education has recently published a series of reports on Title I, these documents have not directly dealt with economic issues (Cross, 1999; O'Day & Gross, 1999). Economist Eric Hanushek's comments about education reform ring true when discussing Title I evaluation: "It is startling how little any of the reports, or the reform movement itself, draw upon economic principles in formulating new plans" (Hanushek & Jorgenson, 1996, p.29). Most of the government studies are concerned with the question: Is Title I improving the achievement levels of the students at whom it is targeted?

The study undertaken in this chapter, however, is concerned with the question: How much do those improvements cost? Specifically, it will examine the question of whether there is a significant relationship between Title I inputs—per-pupil compensatory spending—and the corresponding outputs—student performance on the Comprehensive Test of Basic Skills (CTBS).

Since 1983, when the U.S. Department of Education published *A Nation At Risk,* economists have become increasingly interested in evaluating the relationship between inputs and outputs in the educational production process. The two primary types of research—one that links school resources to student achievement while still in school, and one that considers subsequent student achievement in the labor market—have produced results that contradict one another.[2] Researchers have found that additional school resources do not produce substantial improvement in students' academic performance, but do improve future success in the labor market.

It is important to note that this study, which measures the impact of Title I money on student scores on the Comprehensive Test of Basic Achievement (CTBS), employs only one method of measuring the effectiveness of school resources. Proponents of the competing theory may therefore object to this method of analysis. The most common objection to this kind of analysis is that using test scores as the only measure of student achievement fails to reflect the achievements students may later have in the labor market (Card & Krueger, 1992; Hedges et al., 1994). Using CTBS scores to measure the achievement of Title I students certainly ignores any future impact the Title I funds might have when the students start working. But given this limitation, test scores are still important because they offer information that is immediately available to policymakers. Given that Title I reauthorization is occurring every five or six years and the majority of Title I funds are being delivered to students in early primary grades, it would be impossible to wait for labor-market data to arrive and be analyzed. Given a 5- to 6-year time frame, test scores are the only data widely available to measure student performance.

HISTORY OF TITLE I AND *PROSPECTS*

During its 35-year existence, Title I has taken a variety of shapes. Initially, Title I funds were given directly to school districts on the basis of "the number of children living in poverty and the state's average per-pupil spending." With little federal control in successive years, Title I money was given to local education agencies (LEAs) with no strings attached. This initial setup, however, developed into "just another revenue source for schools" (Palmaffy, 1999).[3] To address this problem, a series of reauthorizations in 1968, 1970, 1974, and 1978 attempted to tighten the guidelines for how Title I money was allocated and how it could be used. The motto for these reforms was "supplement, not supplant," which meant that Title I funds were only to be used to pay for the additional costs of supplementary services. This emphasis resulted in "pull-out" methods, in which the low-performing students were pulled out of their regular classroom to have separate Title I instruction. This method allowed schools and districts to demonstrate that Title I money was being used only for Title I students.

By 1994, however, after further reauthorizations in 1981 and 1988, the pull-out method was no longer considered effective for raising student performances. The 1994 reauthorization placed a new emphasis on integrating Title I funds into schoolwide programs, on Title I accountability, and on loosening federal regulations to allow for more local control. In the reauthorization currently being debated, this same trend toward an integration of services and a heavy emphasis on accountability continues to be strong. Today, Title I reaches over 6 million children annually, most of whom are in primary grades. Although Title I funds may be used for a variety of purposes, over 90 percent are used in schools for instructional support, most often in reading and math (Puma et al., 1997).

Evaluation of Title I includes "hundreds of local and state evaluations, several scholarly attempts to make sense of those evaluations, and two long-term studies" mandated by Congress and funded by the U.S. Department of Education. The *Sustaining Effects Study*, conducted from 1976 through 1979, found that "Title I participants outperformed the needy students, but they did not reach the achievement levels of the more advanced regular students." It was also concluded that "Title I students achieved greater gains in the lower grades than in the higher grades and greater gains in math than in reading programs" (Borman, D'Agostino, Wong, & Hedges, 1998).

The second long-term study, *Prospects: The Congressionally Mandated Study of Educational Growth and Opportunity*, provides the data for this chapter's analysis. Published by the U.S. Department of Education, the data set is derived from a longitudinal study of public school students from 1991–1994. The sample includes almost 40,000 children in 365 schools (both Title I and non-Title I recipients.) The study tracked the same students from 1991–1994 in three cohorts: first, third, and seventh grades. In addition to these students, *Prospects* also collected information from parents, teachers, schools, and districts. Despite a number of holes, the *Prospects* data set is still "arguably the richest contemporary source of national longitudinal information regarding elementary- and middle-school children, their families, and their schools and classrooms" (Borman, et al., 1998). In "*Prospects: Final Report on Student Outcomes,*" Michael Puma and his associates (1997) found that "data from *Prospects* confirm the earlier findings by Coleman et al., that the characteristics of an individual student and his/her family account for the largest part of the overall variation in student achievement as measured by test scores." Specific to Title I, they found that "assistance was, on average, insufficient to close the gap in academic achievement between advantaged and disadvantaged students." Subsequent reports that used the same data set found additional relationships, including benefits from additional days of schooling for the first grade cohort and for schools that "coordinated their [Title I] programs with other school services" (D'Agostino, Borman, Hedges, Wong, 1998; Borman, et al., 1998).

Although the *Prospects* study has produced a number of interesting findings about the relationship between school, family, and individuals to student achievement, one area that has not been studied is the relationship between achievement and spending. The *Prospects* study, however, contains useful information about Title I funding at the district level. This chapter's research project makes use of this previously unused district funding data. During the time of the *Prospects* survey, Title I funds were not given directly to the school districts, but instead were given to counties on the basis of "the number of poor children aged 5-17 identified in the decennial census, with an adjustment using a state average per-pupil expenditure factor intended to recognize cost of living differences across states" (Puma, et al., 1997). Funds were then suballocated to school districts, where (following different sets of allocation guidelines) they were divided up among schools located in high-poverty areas.[4] Students in those schools then received services on the basis of their educational need.

DATA

The *Prospects* data used in this analysis are the CTBS scores, the input of Title I and additional compensatory funding, and a series of control variables. Of the more than 40,000 students tracked in the survey, Puma reports that "21-23 percent of 1st grade cohort students, 18-21 percent of 3rd grade cohort students, and only 5-8 percent of 7th grade cohort students" participated in Title I. The CTBS scores used for analysis are the scale scores for reading and math, which are "units of a single equal-interval scale that is applied across all levels of the CTBS/4 regardless of grade or time of year testing" (Puma, et al., 1997). This procedure allows for statistical comparisons, and there is also an allowance in the CTBS for an expected rate of learning growth each year.

The chosen methodology is not without its detractors. One objection to using CTBS scores stems from the idea that standardized tests do not adequately reflect what a student has learned in an academic year. Instead, portfolios and teacher evaluations should be used for evaluation. This objection has some merit, but test scores are still valuable for two reasons. First, individual evaluations may be easily compared within a single school, or even a single district, but at a national level they are very hard to compare. It would be impossible, for instance, to take millions of individual portfolios from across the country and evaluate them against one another. Because Title I is a national program, it is important that policymakers have a national standard. A national standardized test like the CTBS provides that national benchmark. Second, CTBS scores may in fact be an indicator of future economic success. There is far from consensus on this question, but a recent paper concludes that "there is compelling evidence that test scores measured as early as age 7 have significant effects on future test scores, educational attainments, and labor market outcomes, even after a wide array of observable characteristics have been controlled for" (Currie & Thomas, 1999). CTBS scores may not be a perfect measurement of student achievement, but they are an important one.

This study uses two measurements for per-student inputs. One is a measurement of per-student Title I funding, calculated by dividing a school district's total Title I funding by the district's number of public and non-public students receiving Title I services. The necessary assumption is that Title I funds will be evenly distributed amongst all the students in the district. The second measurement includes additional compensatory funding that a school district may have received from state, local, or additional federal services. The second measurement of per-student input is calculated by summing up a district's total Title I funding plus all other compensatory funding, then dividing by the district's number of public and non-public students receiving Title I services. The necessary assumption here is that the students receiving Title I services are the same students for which the additional compensatory funds will be used. If a large proportion of students are not receiving Title I services, but are nevertheless getting some of those additional funds, then the second per-student expenditure measurement will be overstated.[5] This effect is seen in Table 1, which summarizes the average per-student Title I and total compensatory funding in each of the four survey years.

It is also important to note that there is no significant relationship between receiving Title I funds and receiving additional funds. Since Title I funds are not connected to how much extra funding a district received, each source must be considered separately. In Appendix A, the relationship between Title I funding and additional compensatory funding is considered in more detail.

One problem with the *Prospects* survey is that its broad, ambitious scope left room for a number of holes in the data set. This is true with regard to

TABLE 1
Funding (Title I and Total Compensatory) per Student, per Year
(Measured in Real Dollars, With 1991 as the Base Year)

Academic Year	*AverageTitle I funding per student (SD)*	*Minimum Title I funding per student*	*Maximum Title I funding per student*	*Median Title I funding per student*	*Average total comp. funding per student (SD)*	*Minimum total comp. funding per student*	*Maximum total compfunding per student*	*Median total comp. funding per student*
1990-91	866.48 (388.08)	47.59	2,213.37	803.19	1,300.32 (961.30)	47.59	4,630.55	984.48
1991-92	1,026.68 (539.04)	212.87	3,118.26	930.81	1,568.99 (1,336.7)	224.04	7,939.85	1,115.89
1992-93	991.33 (525.54)	143.26	2,743.56	937.42	1,418.73 (1181.2)	196.43	6,730.88	1,169.36
1993-94	1044.37 (541.38)	215.94	3,286.48	949.20	1,300.94 (857.91)	215.94	5,047.39	1,121.31

the data for district Title I funding. In each of the four academic years, 1990–1991, 1991–1992, 1992–1993, and 1993–1994, there are a possible 155 districts reporting financial information. In any given year, however, only about 100 districts reported their information. Only 64 of the districts reported information for all four years, and the rest were missing data for some of the years. Appendix B details the challenges of the data set, but in general the district observations used for analysis in this study are limited by a lack of unreported district financial information and a failure in some cases to record many of the Title I enrollees' CTBS scores.

Another potential problem with the data are large variations in the size of the school districts. It is conceivable that large districts operate in very different ways from small ones. These differences would not be captured in any of the variables used in the model. The variation in district size also corresponds with a variation in Title I funding. These variations in district-level funding, however, should disappear by using a measurement of funding per student. The relationship between district size and funding is discussed in more detail in Appendix C.

METHOD AND MODELS

There are two levels of analysis in this study. The first is at the district level. Aggregating at the district level (i.e., using district averages of student test scores) is important because a number of policy decisions are based on district-level performance. Many nonacademic publications also rely heavily on aggregated data to support their claims. Using the district as the unit of analysis is also fitting for the *Prospects* data set because all of the Title I funding information is provided at the district level. The second level of analysis is disaggregated and makes the individual student the unit of analysis. As will be seen in the next section, the results from these two levels of analysis are not entirely the same.

This study also uses two styles of ordinary least squares (OLS) regression analysis. The first is a "value-added" model, making the dependent variable the change in CTBS scores from one academic year to the next.[6] The second, a "current period" model, makes only the score from academic year *t* the dependent variable, and uses the score from academic year *t-1* as one of the explanatory independent variables.[7] Because this model includes as an explanatory variable the previous year's CTBS score, the second model of regression has much stronger explanatory power than the value-added one.

The education production function can take many statistically elaborate forms, but this paper will use a simple OLS regression model that has been used widely in the literature (Figlio, 1999). The primary assumption of the model is that student achievement is a function of school, family, and peer inputs. In this study, the purpose of the regression is to focus on one specific school input—the level of per-student Title I funding—to see what effect it has on student achievement on the CTBS. Additional variables are included in the model to control for other school, family, and peer inputs that may also affect a student's CTBS performance. The general form of the model for analysis is:

$$Y_t = f(M_{t,\,t\text{-}1}, S_{t,\,t\text{-}1}, F_{t,\,t\text{-}1}, P_{t,\,t\text{-}1}) \quad (1)$$

where:

Y_t = Student performance on CTBS
M_t = Money from Title I (or other compensatory sources) per-student
$S_{t\text{-}1}$ = Additional school inputs
$F_{t\text{-}1}$ = Family/demographic inputs
$P_{t\text{-}1}$ = Peer inputs
Relationship of interest: $\mathrm{M}y_t / \mathrm{M}M_{t,\,t-1}$

The two basic models used in this paper are:

Model A: Value-Added Model

$$VAREAD_t = \beta_0 + \beta_1\, T1MONEY_{t,\,t\text{-}1} + \beta_2\, INC_t + \beta_3\, BLACK_t + \beta_4\, URBAN_t + \beta_5\, TEACH_t + \beta_6\, AVGREAD_t + \beta_7\, T1KIDS_t \quad (2)$$

Model B: Current Period Model

$$READ_t = \beta_0 + \beta_1 READ_{t\text{-}1} + \beta_2\, T1MONEY_{t,\,t\text{-}1} + \beta_3\, INC_t + \beta_4\, BLACK_t + \beta_4\, URBAN_t + \beta_6\, TEACH_t + \beta_7\, AVGREAD_t + \beta_8\, T1KIDS_t \quad (3)$$

where:

$VAREAD_t$ = Improvement in CTBS reading scores from period $t\text{-}1$ to period t (district averages used in the district-level regressions and individual changes used in the disaggregated regressions)
$READ_t$ = CTBS reading score in period t (district averages used in the district-level regressions and individual student scores used in the disaggregated regressions)
$READ_{t\text{-}1}$ = CTBS reading score in previous period, $t\text{-}1$
$T1MONEY_{t,\,t\text{-}1}$ = Title I funding per student in the district (total Title I funds divided by the number of students in the district receiving Title I services; separate regressions run for Title I funding in the current period and in the period $t\text{-}1$)
INC_t = Average family income in the district for the current period[8]

$BLACK_t$ = Percentage of black students in the district (for district level) and dummy variable (Black = 1, Non-black = 0) for individual regressions
$URBAN_t$ = Dummy variable (Urban Location = 1, Non-urban = 0), only used for individual level regressions
$TEACH_t$ = Percentage of Title I funds spent on teachers in period *t*
$AVGREAD_t$ = Average district reading score on CTBS in period *t*

and where the following were substituted in at various points to analyze both math and reading scores, consider total compensatory funding, add additional controls, check for lag effects, and generally try to explore other possible relationships in the data:

$VAMATH_t$ = Improvement in CTBS math scores from period *t-1* to period *t* (district averages used in the district-level regressions, and individual changes used in the disaggregated regressions)
$MATH_t$ = CTBS math score in period *t* (district averages used in the district-level regressions and individual student scores used in the disaggregated regressions)
$MATH_{t-1}$ = CTBS math score in previous period, *t-1*
$ALLMONEY_{t,\,t-1}$ = Total compensatory funding per student in the district (Title I plus all other state, local, and federal compensatory funds received by a district, divided by the number of students in the district receiving Title I services; separate regressions for current period and period *t-1*)
$DISTCHAR_t$ = Dummy variable (More than 1 school in the district receiving Title I funds = 1, Only 1 school receiving Title I funds = 0)
$AIDES_t$ = Percentage of Title I funds spent on teachers' aides in period *t*
$AVGMATH_t$ = Average district math score on CTBS in period *t*
$LNREAD_{t,\,t-1}$ = Natural log of CTBS reading score in periods *t, t-1*
$LNMATH_{t,\,t-1}$ = Natural log of CTBS math score in periods *t, t-1*
$LNINC_{t,\,t-1}$ = Natural log of average family income in the district for the current period, also used period *t-1*
$FULLTIME_t$ = District's ratio of fulltime Title I employees to Title I students
$STAFF_t$ = Number of Title I staff per Title I students in the district (paid with Title I funds)
$EXTRASTU_t$ = Average per-student extra compensatory funding in the district (non Title I)

The dependent variable takes two forms in this study. In equation (2), it is noted as $VAREAD_t$ and it represents the change in CTBS scores from one school year to the next. In equation (3), it is $READ_t$, and it is defined as the CTBS score in the current period. The explanatory variable of interest, *T1MONEY,* is considered in both the current period *t,* and the previous period *t-1*. Analyzing the effects from both periods allows us to check for lag effects (i.e., spending Title I money in one school year and not seeing the effect on test scores until the next school year).

The rest of the variables are used in order to control for a number of other inputs that affect student CTBS performance. Because there are so many possible factors that might affect student academic achievement, isolating the effect of any single independent variable is always difficult. The control variables used in this paper do not account for every factor outside of Title I funding, but they control for some of the most important factors in student achievement.[9]

The variables for districts' average family income, Black/nonblack, and urban/non-urban are designed to control for the socioeconomic atmosphere of the student's educational experience. The U.S. Department of Education's *Final Report of the National Assessment of Title I* confirms that a school's poverty level has a strong negative relationship to student performance (Cross 1999). Using average family income in the district serves both as a proxy for the school's poverty level (poor schools are in districts with poor families,) and as a control for the family environment from which the student is coming. The economic logic is that family income is negatively related to potential out-of-school educational services that would not be captured in the study. The use of the Black/nonblack dummy variable is in line with Borman et al. (1998), who found substantial coefficients for ethnicity dummy variables in a preliminary review of the *Prospects* data. Testing for the level of urbanization is a control also used frequently in analysis of at-risk students.

In the individual regressions, the variable for average district reading scores, *AVGREAD*, is a control for peer effects. It attempts to control for peer effects by using the average district CTBS scores as a proxy for the peer environment in which the student is learning. In a district with high CTBS scores the student would be surrounded by high-achieving students, and vice versa. School effects are entered into the model through the variables for number of fulltime Title I employees per student, number of Title I staff per student, and number of students in the district (a proxy for district size.) These variables attempt to offer some basic controls for the student's immediate academic environment.

Even if these family, peer, and school controls are not as comprehensive as one would like, there is still one very good reason to accept the results from regression model B. In these regressions, both at the district and individual levels, the most important control variable is the previous year reading/math score. This is a very valuable explanatory variable because it incorporates everything that affected the student's CTBS performance the year before. Therefore, as long as there were no significant changes in the other control variables (e.g., family income rapidly increased or the school atmosphere dramatically changed), the previous score variable should theoretically offer a great deal of control.

RESULTS

In both the district level and disaggregated analysis, the primary regression results are reported. Additional regressions were run using variations on the basic model, but they did not return results that varied significantly from those shown in this section.[10] With the exception of the control for Black/nonblack and the control for peer test averages in the district, the control variables were not consistently significant in any single direction. Since many of these control effects have been explored previously in Puma (1997), Borman et al. (1998), and D'Agostino et al. (1998) they will not be considered in depth here. Discussion of the control variables and their impact on student achievement is included in Appendix D.

District-Level Analysis

The results from the district level analysis, summarized in Table 2, indicate that when aggregated at the district level, there is no statistically significant relationship between the level of per-student Title I funding and student achievement on either the reading or math portions of the CTBS. The only significant result, in the Model A Title I regression in Period 2, might suggest that an increase in Title I funds will increase the value added on reading CTBS scores, but this result is not supported in the Model B regression. Since the Model B regressions employ a better set of control variables, the result from the Model A regression is suspect. Furthermore, since it is the only significant result among a variety of other district-level regressions, it is not enough to overturn the broad conclusion. This finding is consistent with the test-score literature, which has not found a statistically significant relationship between additional school resources and improvements in student achievement (Hanushek, 1996).

Disaggregated Analysis

Results from the disaggregated student-level analysis, presented by cohort in Tables 3, 4, and 5, suggest a relationship between Title I funding and student achievement that is slightly different than the relationship found at the district level. Although the majority of coefficients remain statistically insignificant, there are several notable exceptions and patterns. Before discussing these results, however, it must be noted that even the significant results are very small coefficients. The largest significant coefficient for Model B Title I regressions is .0076. This is seen in Table 3, and it

TABLE 2
District Level Analysis: OLS Estimated Effects of District Average Title I Funding (per student) on District Average Student Reading and Math Scale Scores on the CTBS

	Reading			*Math*		
	Period 1: Spring 1991 - Spring 1992^a(SD)	*Period 2: Spring 1992 - Spring 1993(SD)*	*Period 3: Spring 1993 - Spring 1994(SD)*	*Period 1: Spring 1991 - Spring 1992 ^b(SD)*	*Period 2: Spring 1992 - Spring 1993(SD)*	*Period 3: Spring 1993 - Spring 1994(SD)*
Title I money on value added	-.0048 (.0078)	**.0356** **(.0133)** *	-.00093 (.0064)	-.0159 (.012)	-.0062 (.0129)	-.00081 (.0076)
Title I on current period scores	-.0081 (.0063)	.0021 (.0095)	-.00033 (.00030)	-.0158 (.012)	-.0182 (.0114)	.0012 (.0062)
All compensatory money on value added	.00099 (.0032)	-.0056 (.0050)	-.000026 (.0014)	-.0055 (.0050)	.0051 (.0047)	-.0018 (.0016)
All compensatory money on current period scores	-.00010 (.0026)	-.0012 (.0032)	.000084 (.0013)	-.0054 (.0050)	-.0020 (.0049)	.0013 (.0013)
Mean value added	31.63 (36.85)	54.77 (49.36)	18.44 (28.61)	-60.28 (54.61)	-25.10 (45.29)	26.89 (35.25)
Mean CTBS score (current period, t)	610.38 (46.50)	629.47 (33.19)	647.59 (33.29)	599.79 (63.88)	632.37 (40.37)	658.31 (33.82)

Mean CTBS score (previous period, t-1) [c]	578.76 (61.78)	574.70 (51.30)	629.16 (33.61)	660.06 (33.12)	657.47 (29.78)	631.41 (42.42)
Mean Title I funding per student (real dollars, 91 base year)	972.38 (577.50)	963.54 (502.61)	1083.20 (559.79)	972.38 (577.50)	963.54 (502.61)	1083.20 (559.79)
Mean total comp. funding per student (real dollars, 91 base year)	1489.14 (1383.04)	1462.32 (1279.14)	1588.16 (2381.20)	1489.14 (1383.04)	1462.32 (1279.14)	1588.16 (2381.20)
Observations	90	83	80	90	83	80
R-squared for Title I value added model (Model A) [d]	.1440	.1380	.0997	.0595	.0436	.1613
R-squared for Title I current period model (Model B)	.6629	.1791	.4274	.3248	.1106	.3961

Notes: *Statistically significant at the .05 level are in bold.

[a] The first cohort, which started the 1991-1992 school year in first grade, did not take the CTBS in Spring 1991 because they were not yet included in the study. To make up for this, they took the reading CTBS in both Fall 1991 and Spring 1992. The results in this table include this cohort, and use the difference between their Fall 1991 and Spring 1992 scores to determine a value-added figure.

[b] The first cohort took only the reading portion of the CTBS in Fall 1991, and therefore the scores reported in this column reflect only cohorts 3 and 7.

[c] Variation in the mean CTBS scores is due to different samples in different years. In the Period 1 column, for instance, the mean score for CTBS reading 1992 is 610.38, while in the Period 2 column the mean score for CTBS reading 1992 is 574.70. The reason for this difference is that the sample has changed because of failure to report financial information. For more details on these aspects of the data set, see Appendix B.

[d] The R-squared values here are not for the four regressions using "All compensatory money" in place of Title I money, but the R-squared values for the regressions involving all compensatory funding are very similar to the ones reported in this table.

TABLE 3

For Cohort 1: OLS Estimated Effects of District Average Title I Funding (per Student) on Individual Student Reading and Math Scale Scores on the CTBS

	Reading			*Math*		
	Period 1: Fall 1991 - Spring 1992 (SD) [a]	*Period 2: Spring 1992 - Spring 1993 (SD)*	*Period 3: Spring 1993 - Spring 1994(SD)*	*Period 1: Fall 1991 - Spring 1992(SD)* [b]	*Period 2: Spring 1992 - Spring 1993(SD)*	*Period 3: Spring 1993 - Spring 1994(SD)*
Title I money on value added	.0035 (.0028)	**.0065** **(.0024) ***	**-.0062** **(.0029) ***	—	-.0027 (.0023)	.0025 (.0027)
Title I on current period scores	.0036 (.0026)	**.0076** **(.0023) ***	-.0046 (.0025)	—	.00069 (.0021)	.0013 (.0023)
All compensatory money on value added	**.0024** **(.00081) ***	.0021 (.0013)	-.0006 (.0005)	—	-.0021 (.0013)	.00049 (.00046)
All compensatory money on current period scores	**.0018** **(.00073) ***	**.0025** **(.0012) ***	-.00002 (.00043)	—	-.00085 (.0011)	.00052 (.00039)
Mean value added	77.43 (57.77)	60.69 (54.54)	45.38 (53.10)	—	82.02 (53.46)	67.00 (48.65)
Mean CTBS score (current period, t)	521.18 (59.98)	580.77 (71.80)	623.40 (62.59)	—	563.45 (67.97)	631.26 (59.83)
Mean CTBS score (previous period, t-1) [c]	443.74 (55.83)	520.08 (60.49)	578.05 (70.74)	—	481.44 (72.83)	564.26 (65.77)

Mean Title I funding per student (real dollars, 91 base year)	963.86 (520.97)	985.15 (539.68)	1004.17 (508.21)	—	985.15 (539.68)	1004.17 (508.21)
Mean total comp. funding per student (real dollars, 91 base year)	1627.16 (1756.39)	1365.45 (977.31)	1645.49 (2779.33)	—	1365.45 (977.31)	1645.49 (2779.33)
Observations	1954	1919	1521	—	1919	1521
R-squared for Title I value added model (Model A)[d]	.0142	.0052	.0286	—	.0029	.0129
R-squared for Title I current period model (Model B)	.2625	.4569	.4991	—	.5166	.5126

Notes: * Statistically significant at the .05 level are in bold.

[a] The two testing times here are Fall 1991 and Spring 1992. (See note 1 for Table 2 above.)

[b] The first cohort took only the reading portion of the CTBS in Fall 1991.

[c] Variation in the mean CTBS scores is because of different samples in different years. Here, the set of cohort 1 students who took the CTBS in both 1991 and 1992 is different from the group who took the test in both 1992 and 1993. The different means represent these variations in the sample.

[d] The R-squared values here are not for the four regressions using "All compensatory money" in place of Title I money, but the R-squared values for the regressions involving all compensatory funding are very similar to the ones reported in this table.

TABLE 4
For Cohort 3: OLS Estimated Effects of District Average Title I Funding (per Student) on Individual Student Reading and Math Scale Scores on the CTBS

	Reading			*Math*		
	Period 1: Spring 1991 - Spring 1992(SD)	*Period 2: Spring 1992 - Spring 1993(SD)*	*Period 3: Spring 1993 - Spring 1994(SD)*	*Period 1: Fall 1991 - Spring 1992(SD)*	*Period 2: Spring 1992 - Spring 1993(SD)*	*Period 3: Spring 1993 - Spring 1994(SD)*
Title I money on value added	**.0040** **(.0015)** *	.0011 (.0015)	.00020 (.0022)	**.00762** **(.0016)** *	**.00040** **(.0015)** *	**-.0045** **(.0020)** *
Title I on current period scores	.0025 (.0013)	.00097 (.0014)	-.00060 (.0020)	**.0036** **(.0014)** *	.0025 (.0013)	**-.0040** **(.0019)** *
All compensatory money on value added	**.0012** **(.00045)** *	-.00058 (.00091)	-.00079 (.0011)	**.0023** **(.00045)** *	-.00050 (.00090)	-.00022 (.00097)
All compensatory money on current period scores	**.00078** **(.00039)** *	-.0012 (.00085)	-.0013 (.00010)	**.0011** **(.00042)** *	-.00066 (.00079)	-.00060 (.00091)
Mean value added	18.81 (37.25)	12.03 (36.67)	22.71 (41.20)	**18.75** **(37.67)**	27.79 (36.35)	17.74 (36.34)

Mean CTBS score (current period, t)	659.76 (46.28)	669.17 (49.07)	685.59 (49.83)	666.83 (46.27)	693.21 (44.01)	709.57 (45.36)
Mean CTBS score (previous period, t-1)[a]	640.94 (51.69)	657.14 (46.95)	662.88 (49.44)	648.08 (46.98)	665.42 (47.47)	691.84 (41.32)
Mean Title I funding per student (real dollars, 91 base year)	897.87 (530.03)	873.83 (533.84)	964.15 (663.23)	897.87 (530.03)	873.83 (533.84)	964.15 (663.23)
Mean total comp. funding per student (real dollars, 91 base year)	1548.17 (1804.54)	1192.87 (926.83)	1150.53 (1205.04)	1548.17 (1804.54)	1192.87 (926.83)	1150.53 (1205.04)
Observations	2205	2257	1068	2205	2257	1068
R-squared for Title I value added model (Model A)[b]	.0116	.0182	.0168	.0162	.0102	.0306
R-squared for Title I current period model (Model B)	.5188	.5189	.4473	.4570	.4840	.4426

Notes: * Statistically significant at the .05 level are in bold.

[a] Variation in the mean CTBS scores is because of different samples in different years. See note 3 for Table 3.

[b] The R-squared values here are not for the four regressions using "All compensatory money" in place of Title I money, but the R-squared values for the regressions involving all compensatory funding are very similar to the ones reported in this table.

TABLE 5

For Cohort 7: OLS Estimated Effects of District Average Title I Funding (per Student) on Individual Student Reading and Math Scale Scores on the CTBS

	Reading			*Math*		
	Period 1: Spring 1991 - Spring 1992(SD)	*Period 2: Spring 1992 - Spring 1993(SD)*	*Period 3: Not Available* [a]	*Period 1: Fall 1991 - Spring 1992(SD)*	*Period 2: Spring 1992 - Spring 1993(SD)*	*Period 3: Not Available*[a]
Title I money on value added	-.000058 (.0068)	.0043 (.0062)	—	-.0017 (.0058)	-.0040 (.0068)	—
Title I on current period scores	-.0063 (.0062)	.0015 (.0057)	—	-.0064 (.0054)	-.0068 (.0061)	—
All compensatory money on value added	-.0051 (.0040)	.0024 (.0020)	—	-.0020 (.0034)	**.0056** **(.0022)** *	—
All compensatory money on current period scores	**-.0074** **(.0037)** *	**.0037** **(.0019)** *	—	-.0053 (.0032)	**.0054** **(.0020)** *	—
Mean value added	10.38 (35.96)	3.38 (40.96)	—	11.47 (31.19)	2.94 (45.42)	—
Mean CTBS score (current period, t)	720.0 (39.04)	717.65 (47.58)	—	742.11 (36.72)	735.86 (48.94)	—

Mean CTBS score (previous period, t-1) [b]	709.62 (36.01)	714.27 (42.87)	—	730.64 (35.63)	732.92 (43.10)	—
Mean Title I funding per student (real dollars, 91 base year)	734.50 (475.36)	738.66 (465.03)	—	734.50 (475.36)	738.66 (465.03)	—
Mean total comp. funding per student (real dollars, 91 base year)	973.08 (805.60)	1408.08 (1420.41)	—	973.08 (805.60)	1408.08 (1420.41)	—
Observations	191	266	—	191	266	—
R-squared for Title I value added Model (Model A) [c]	.0025	.0295	—	.0342	.0568	—
R-squared for Title I current period model (Model B)	.3062	.3826	—	.4154	.3351	—

Notes: * Statistically significant at the .05 level are in bold.

[a] Cohort 7 left the Prospects study and did not take the CTBS in Spring 1994. A value-added measurement for this period is therefore not available.

[b] Variation in the mean CTBS scores is because of different samples in different years. See note 3 for Table 3.

[c] The R-squared values here are not for the four regressions using "All compensatory money" in place of Title I money, but the R-squared values for the regressions involving all compensatory funding are very similar to the ones reported in this table.

represents the effect of Title I funds in the 1992–1993 school year on cohort 1's 1993 test scores. Evaluated at their means, this result implies that a 10 percent ($98.52) increase in Title I per-student funding will only result in a .076 percent (.44 point) increase in the CTBS reading scale score. Although some of the significant coefficients are highlighted below, even the significant results suggest that the connection between Title I funds and improved CTBS results is weak.

Key Findings

None of the Title I-related regressions produced statistically significant coefficients for cohort 7. Cohort 7 started the 1991–1992 school year in seventh grade and was the oldest cohort in the *Prospects* study. These results suggest that Title I funds are not cost effective for the older primary grades. This conclusion is supported by funding decisions already made by the schools. In the sample of students analyzed in this study, those students whose districts reported financial information—cohorts 1 and 3—were each about 10 times larger than cohort 7. This means that in the 1991–1992 school year, for each seventh grader receiving Title I funds there were 10 first graders and 10 third graders participating in the Title I program. The implication from the way Title I services are allocated is that schools and administrators are already aware of the fact that Title I resources are most effective at the younger grades. The result here confirms that decision as being the cost-effective one. Results from cohort 7 also show that additional compensatory funding may have an impact on CTBS scores. The Period 1 effect is negative and only for reading scores, while the Period 2 effects are positive and for both reading and math scores. Taken together, these two results from the cohort 7 individual analysis suggests that although Title I funding is not cost effective, other compensatory programs (perhaps better structured for older children) may be able to make a small impact.

The finding that Title I funds are more effective in the lower grades is supported by the results from cohort 3. For cohort 3, there were significant positive effects seen from Title I services in both math and reading in the first two periods. By the third period, however, the effect of Title I on reading was insignificant, and the impact on math was actually significantly negative. These results would support the hypothesis that Title I is most effective at the lower grades and loses effectiveness as children grow older. Cohort 3 started the survey as third graders in the 1991–1992 school year, but by the 1993–1994 school year they were completing fifth grade. That the effect of Title I remained positive and significant and then fell to insignificance (for reading) and negative (for math) may suggest that there is a threshold after which Title I funds are not cost effective. This conclusion makes further sense if the importance of cumulative effects in education production is considered. In other words, the older the child who is eligible for Title I, the greater the potential gap between that student and the grade-level expectations. Title I may not be as effective because it has more ground to make up at the older ages. It could also be that concepts being taught at the higher grades are more complex, and Title I funds cannot be used effectively to teach those concepts.

TABLE 6
Lag Effects For Cohort 1: OLS Estimated Effects of District Average Title I Funding (per student) on Individual Student Reading Scale Scores on the CTBS [a]

	Title I money(SD)	*Total Compensatory Funding(SD)*
Cohort 1		
Value added model, from 1991-1994	**.0185** **(.004) ***	**.00491** **(.0019) ***
Current period model, effect of 1991 scores on 1994	**.015** **(.0036) ***	**.0070** **(.0017) ***
Mean value added	181.96	181.96
Mean CTBS score (1994)	627.38	627.38
Mean CTBS score (1991)	445.38	445.38
Mean 1991 Title I funding per student (real dollars, 91 base year)	849.25	849.25
Mean 1991 total comp. funding per student (real dollars, 91 base year)	1342.62	1342.62
Observations	1481	1481
R-squared for Title I value added Model (Model A) [b]	.0411	.0411
R-squared for Title I current period model (Model B)	.2056	.2056

Notes: * Statistically significant at the .05 level are in bold.

[a] This measures the value added from the CTBS reading test taken in Fall 1991 to the reading test taken in Spring 1994 (thus including three full academic years.) Since the first cohort did not take the math portion of the CTBS in Fall 1991, those scores are not included here.

[b] The R-squared values here are not for the two regressions using "All compensatory money" in place of Title I money, but the R-squared values for the regressions involving all compensatory funding are very similar to the ones reported in this table.

Given the hypothesis suggested by the results from cohorts 3 and 7—that Title I funds are most effective at the lower grades—it is somewhat surprising that there are not more significant results seen in the individual analysis of cohort 1. Cohort 1 started 1991–1992 in first grade, but the only positive significant result from Title I is seen in the second period. There, Title I funds were positively related to increases in reading CTBS scores. The following year, in Period 3, the only significant result was a negative relationship for the relationship between Title I funds and the value-added to reading scores.

Why aren't there more significant positive results from the first cohort? One answer is that there may be more additional programs in the earlier grades, and these make it difficult to isolate the effects of Title I. In Periods 1 and 2, there is a positive significant relationship between total compensatory funding and reading scores, suggesting that programs beyond Title I may have a significant impact. A second answer is that the effects of Title I may not be seen until later in the students' educational careers. If this were the case, it would be hard to pick up the year-to-year effects.

To look at this type of lag effect, another set of regressions was run measuring the change in student CTBS achievement from 1991 to 1994.[11] These results, presented in Table 6, suggest that there may be lagged Title I effects, but they are not of any greater magnitude. For the first cohort, both lagged models show significant positive relationships between per-student Title I funding and CTBS achievement. Although the coefficients are greater than in the year-to-year results when evaluated at their means, the impact of Title I money on CTBS achievement is no greater. Using results from the lagged regressions, a $84.93 (10 percent) increase in per-student Title I funding will result in a .34 point (.19 percent) increase in the reading value-added from 1991 to 1994. Even when using a longer value-added period, the relationship between the level of Title I funding and CTBS achievement remains about the same: There is a significant positive relationship, but it is small in magnitude.

CONCLUSIONS

The results of this study suggest several conclusions concerning the cost-effectiveness of Title I during 1991–1994. First, when aggregated at the district level, there is no statistically significant relationship between per-student Title I funding and student achievement on CTBS reading or math scores. Second, when evaluated at the level of the individual student, the only potential significantly positive results from additional Title I funding are extremely small. Third, if Title I funds are cost effective, it is only in the younger grades. At Grades 5 and above, there is no indication that Title I funds are related to improvements in CTBS scores.

The general conclusion arising from this study is that during the four years (1991–1994) that the *Prospects* data was collected, Title I money probably did not matter in terms of improving student achievement on CTBS scores. If Title I money did matter, it was marginal and only for the younger grades. This conclusion is consistent with previous literature that has used test scores as a measure of student achievement (Hanushek, 1986, Burtless, 1996). Although not the focus of this paper, it seems probable that Title I spending does not prove cost effective because it cannot overcome a number of critical socioeconomic factors. This conclusion is consistent with Puma (1997) who found that Title I assistance was "insufficient to close the gap in academic achievement between advantaged and disadvantaged students."

Reworking the analysis with several considerations in mind could provide even more support. First, more careful consideration of the control variables is necessary. Given the large number of variables that affect student achievement, it would be useful to construct a more comprehensive statistical model to capture them. Second, a more disaggregated analysis could be used to consider the effects of different classroom practices and specific Title I teachers.[12] Finally, more analysis could be carried out on the ways in which the additional compensatory funds are spent in the school districts. This might sharpen the results and better isolate the effects of the Title I money.

In 1994 the Clinton administration authorized a significant restructuring of Title I, which allowed Title I funds to be integrated more effectively into existing schoolwide programs. It may be that in the second half of the 1990's Title I money had a greater effect on student achievement. A follow-up cost-effectiveness analysis of the post-1994 data could be very helpful in giving perspective to the results found for 1991–1994.

Future analysis should also be aware of the level of analysis it employs. The differing results between the district-level and individual-level analyses indicate that the level of analysis is an important choice for the researcher. Because district-level figures are the easiest to collect and are more readily available, policy decisions are often made based on district-level analysis. It might be wise, however, to consider alternative forms of analysis as well.

Additional policy implications from the conclusions of this chapter are not straightforward. Given that Title I funding does not seem to be linked to improved student achievement, policymakers might consider reallocating funds to programs that deal more directly with the socioeconomic backgrounds of the students. Perhaps James Traub (2000) is right in arguing, "Schools are not the answer." On the other hand, it may be that there is a critical level of Title I funding below which an impact will not be felt. If this is the case, then policymakers would do well to allocate even more funds to Title I programs. Schools *with* programs such as Title I may be the answer, but not at their present level of funding.[13]

APPENDIX A
RELATIONSHIP BETWEEN TITLE I AND EXTRA COMPENSATORY FUNDING

Two measurements of funding per student have been used in this chapter. One is restricted to Title I dollars per student, and the other includes both Title I money and all other compensatory funding the school district receives. What is the relationship between these two types of funding? Theoretically there are two plausible relationships. First, since both sources of money target the same group (at-risk kids), a district that receives substantial Title I funding also might receive significant additional compensatory funding. On the other hand, it might also be the case that a district already receiving substantial Title I money does not need as much money from additional sources. To test these two hypotheses, district average Title I per-student funding was regressed on the same district's additional compensatory funding. The OLS model was:

Model: $OTHER_t = \beta_0 + \beta_1 T1MONEY_t$

where:

$OTHER_t$ = Extra compensatory funding per student in a given district in period t (measured in real dollars, 1991 as base year)
$T1MONEY_t$ = Title I funding per student in the district in period t (also measured in real dollars, 1991 as base year)

Since a number of the districts received zero extra funds, two regressions were run for each academic year. The first includes all districts that reported Title I funding, regardless of whether or not they received any additional funding. This first regression was labeled "1990-91 All." The second regression in each year drops those districts that received no extra local, state, or federal compensatory funding. This second regression as labeled "1990-91 Limited." The results, summarized in Appendix Table 1, demonstrate that there is no significant relationship between reported Title I funding and additional compensatory funding. This is probably due to different allocation practices between the two sources. There may be significant variation in state and local decision-making processes that result in large variations in how much additional compensatory funding a district receives. If these extra funds are not allocated in the same way that Title I funds are, it would explain why there is no significant relationship between levels of funding from the two sources. Because there is no significant relationship between the two, it is important that this study has considered each funding source separately, because limiting the analysis to Title I funds only would not capture the effects from the additional sources of compensatory funding.

APPENDIX TABLE 1

OLS Estimated Effects of District Average Title I Funding (per-Student) on District Average Extra Federal, State, and Local Compensatory Funding (per-Student)

	1990-91 All [1]	*1990-91 Limited*	*1991-92 All*	*1991-92 Limited*	*1992-93 All*	*1992-93 Limited*	*1993-94 All*	*1993-94 Limited*
Title I money on extra compensatory funding(SE)	.1446 (.1978)	.2238 (.3360)	-.0292 (.2387)	-.0537 (.4028)	-.0144 (.0438)	.1564 (.3912)	-.0804 (.1444)	-.1011 (.2651)
P>|t|	.466	.508	.903	.894	.744	.691	.579	.705
R-squared	.0050	.0083	.0002	.0004	.0010	.0034	.0034	.0032
Adjusted R-squared	-.0043	-.0104	-.0102	-.0209	-.0080	-.0178	-.0075	-.0189
Observations	109	55	99	49	113	49	94	47

Notes: 1 All years are in academic years, roughly September through May/June.

APPENDIX B

Limitations of the *Prospects* Data Set

In the *Prospects* survey, all spending questions were asked of the district coordinator of Title I programs. All of the financial information (i.e., amount of Title I funding, how that money was spent, and amount of extra funding) used in this chapter is taken from information reported in the District Coordinator Questionnaire. One of the major limitations of the analysis in this study was a lack of reported district financial information. While data insufficiencies in other categories (e.g., test scores) also presented problems, the failure of some districts to report their financial information in certain years made any analysis of that district impossible in that year. Therefore, it was impossible to evaluate cost-effectiveness for districts that didn't report their costs. Appendix B details the extent of the missing financial data problem as well as the challenges posed by other aspects of insufficient data. The criteria districts had to meet to be included in the regression analysis is explained.

In each of the four academic years (1990–1991, 1991–1992, 1992–1993, and 1993–1994) in which the *Prospects* study was conducted, 155 districts could have reported financial information. The 155 potential observations, however, are much larger than the number of "good observations." "Good observations" refers to those observations that include all the necessary information (e.g., costs, test scores, control variables) for the regression to be run. Depending on the specific regression, the amount of "necessary information" varies. For example, if regressions are run in which one of the independent variables is "previous average reading score," then the entire first year of district observations is necessarily thrown out because there is no information for the previous year (the year before data was collected). The same issue arises when using a "value added" dependent variable. In the case of value-added regressions, only intervals between years count as periods. This reduces the analysis from four academic years to three intervals between academic years. In general, there are two constraints that determine the number of good observations:[14]

1. District must have reported their financial information[15]
2. District must have at least one (or more, depending upon the model specification) Title I student(s) taking the Comprehensive Test of Basic Skills (CTBS)

Constraint 1: District Must Have Reported Their Financial Information

With a maximum of four, and a minimum of 0, the average number of years that the 155 districts reported their financial information was 2.77 years, with a standard deviation of 1.27 years. In the data set, it is impossi-

APPENDIX TABLE 2
Number of School Districts Reporting Financial Information

	Column A	*Of those in Column A, two years in a row*	*Of those in Column A, three years in a row*
Zero Years	4	—	—
One Year	35	—	—
Two Years	18	12	—
Three Years	34	34	0
Four Years	64	64	64
Total	155	110	64

ble to determine whether the absence of financial information from a district is because they received no Title I funding that year (and thus didn't feel the need to fill out the form), or because their funding was not recorded in the study (they just ignored the questionnaire). Without knowing for sure, the latter provides the most likely explanation, because there are many districts for which there is no financial information in some years and for which it seems very implausible (given their reporting in other years) that they would have zero Title I funding for that year. For example, if a district reports $50,000 in Title I funding in 1991–1992 and $90,000 in 1993–1994, but reports nothing in 1992–1993, it seems unlikely that they had zero funding in that middle years. Appendix Table 2 details the extent of the missing financial data problem.

Constraint 2: District Must Have at Least One (or More, Depending Upon My Model Specification) Title I Student(s) Taking the CTBS.

To conduct a cost-benefit study, one needs not only costs, but also benefits data. The benefits in this study are Title I student outcomes on the CTBS. Since the focus is only on those students who receive Title I support, some districts are excluded from the analysis because they have very few Title I students taking the CTBS. When aggregating to the district level, an average of all the Title I students test scores is used to arrive at the "District Average CTBS Reading/Math Score." There is a potential problem if this average is determined by only one or two students instead of a larger group. Although the individual-level regressions did not face this same problem, it was a significant constraint on the district-level analysis. It is necessary to know to what extent the Title I students reporting CTBS scores are representative of the district's entire Title I population. Appendix Table 3 examines this question. It is also important to know how dis-

APPENDIX TABLE 3
Average Number of Title I Students per District Reporting CTBS Scores Each Academic Year

Academic Year	*Total number of districts*	*Mean number of Title I students who reported CTBS scores*	*Standard Deviation*	*Min.*	*Max*	*Mean ratio of: Title I CTBS students /All Title I students in district*
1990–91	155	54.697	72.766	0	453	.0811
1991–92	155	47.974	65.882	0	365	.105
1992–93	155	48.464	63.198	0	283	.317
1993–94	155	31.761	47.841	0	289	.0658

tricts vary in terms of the raw number of Title I students reporting test scores. This is detailed in Appendix Table 4. The key result indicated by both of these tables is that a number of districts must be dropped because they lack a sufficient number of Title I students reporting CTBS scores.

Individually, constraints 1 and 2 provide challenges to cost-benefit analysis. When these constraints are used simultaneously, as they must be for the regressions to occur, the number of good observations drops significantly (see Appendix Table 5).

APPENDIX TABLE 4
Distribution of Districts by Number of Title I Students Reporting CTBS Scores in Each Academic Year

Number of Title I students reporting CTBS scores in a district	*1990–91 Academic Year*	*1991–92 Academic Year*	*1992–93 Academic Year*	*1993–94 Academic Year*
0 Students	16	34	32	46
1-10 Students	15	13	19	21
11-25 Students	31	29	33	35
26-50 Students	35	36	26	22
51-75 Students	10	11	11	9
76-100 Students	15	7	11	9
101-150 Students	11	16	8	8
151-200 Students	6	3	10	2
200-300 Students	2	3	5	3
300+ Students	4	3	0	0
Total	155	155	155	155

APPENDIX TABLE 5
Districts with Financial Information and Reported Title I CTBS Scores

	Column B				
Year	*Number of districts reporting financial information*	*No. of districts in column B for which there is at least 1 Title I student reporting a CTBS score*	*No. of districts in col. B for which there are at least 10 Title I students reporting CTBS scores*	*No. of dist. in col. B for which there are at least 25 Title I students reporting CTBS scores*	*No. of dist. in col. B for which there are at least 50 Title I students reporting CTBS scores*
1990–91	110	103	82	60	35
1991–92	99	96	85	68	37
1992–93	118	113	95	63	37
1993–94	102	97	81	51	31
Total	429	409	343	242	140

The lack of reported district financial information combined with a lack of adequate number of Title I students reporting CTBS data may generate a bias in the data set. Nonreporting of district financial information may be correlated with a lack of district organization for Title I or a transition period (in which directors were changing and the survey was not filled out). Districts may have avoided reporting financial information if they thought it would make their district look bad. Further, using only districts that have a decent number of reported Title I CTBS scores may also fail to capture some of the Title I effects. This study did not conduct an extensive analysis of those districts that did not report financial information, nor of those districts with very few Title I CTBS scores reported. In further research, both sets of districts should be characterized to see if they are similar to or different from the districts with good information.

APPENDIX C

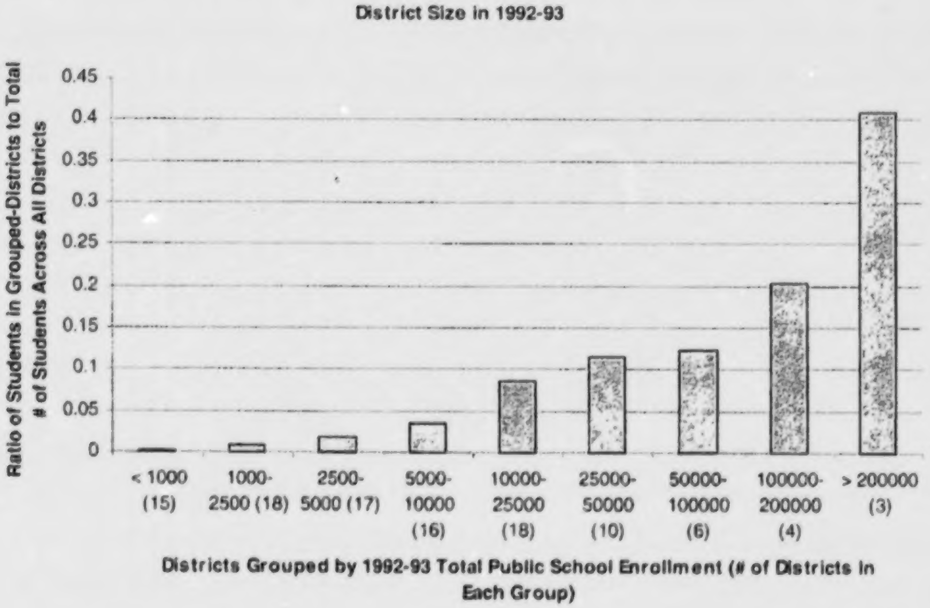
Relationship Between District Size and Title I Funding

In the random sample of school districts included in the *Prospects* survey, there is significant variation in district size. In Table 6, the difference between the means and medians indicates that this sample of districts is

APPENDIX TABLE 6
District-wide Enrollments of Public School Students

	Min. No. of Public School Students Enrolled	*Max*	*Mean (SD)*	*Median*
1990–91	261	407,229	20,844 (49,310)	6308.5
1991–92	70	632,218	31,628 (84,118)	5409
1992–93	319	638,585	28,843 (80,291)	5141
1993–94	329	312,300	23,699 (46, 920)	7554

skewed to the right when considered in terms of district size. This is shown graphically in Appendix Graph 1, where the largest group of districts (3 districts each larger than 200,000) accounts for over 40 percent of the total student population across districts. The data in Appendix Graph 1 is only from the 1992–1993 school year, but it is representative of the other school years as well.



APPENDIX GRAPH 1
Percentage of Total Student Enrollment (Across All Districts) Held by Each District Group (Grouped by Size)

In addition to variations in district size, there are also significant differences in the amount of Title I funding a district receives. The amount of Title I funding per district is also skewed to the right, as seen in Appendix Table 7. Although some districts receive what may seem to be extremely large Title I grants, it is still a reasonable amount when considered relative to the total amount (nationally) of Title I funds distributed nationwide. In 1991, for instance, the total funding for Title I was $5,557,678,000. The district that received $137,000,000, therefore, received approximately 2.47 percent of the entire Title I allocation.

The relationship between these two variations—district size and per-district Title I funds received—is a strong positive one. These differences are quantified in Appendix Table 8. To empirically test the relationship, "Total Title I funding received by a district" was regressed against two proxies for district size. The two measurements of district size are "Total number of students in the district receiving Title I services" and the "Total number of public school students enrolled in the district." In both cases, the results are the same: The size of the district is positively related to the amount of Title I funding they receive, and the explanatory power is very strong. This is the expected result. The larger the district, the more Title I funding the district receives.

APPENDIX TABLE 7
Yearly Amount of Title I Funding Per District
(in Real Dollars, 1991 Base Year)

	Minimum amount of Title I funding per district	*Max*	*Mean (SD)*	*Median*
1990–91	3,387	137,000,000	4,071,494 (15,200,000)	480,837
1991–92	2,655	128,000,000	6,577,175 (19,400,000)	642,310
1992–93	2,572	132,000,000	5,669,666 (18,300,000)	554,297
1993–94	2,508	79,400,000	5,399,052 (13,500,000)	894,475

APPENDIX D

Effect of Control Variables on Student Achievement

Although the control variables are not the focus of this study, a brief discussion of their impact on CTBS student achievement is useful in determining some of the other school, family/demographic, and peer effects that are acting on the Title I students included in the *Prospects* study. All controls for which statistically significant coefficients were generated at least twice are reported in Appendix Tables 9, 10, and 11. Controls which were not significant included the dummy variable control for urban school location, the dummy control variable for district character (testing for more than one Title I school in the district), the percentage of Title I money spent on teachers' aides, and the number of Title I staff per student.

As expected, at both the district and individual levels of analysis, previous performance on the CTBS (*PREVREAD* or *PREVMATH*) was the best indicator of current period performance. This is both intuitive and consistent with Borman et al. (1998) who found that "the best predictors of each test score were the test scores at the other two time points" (p. 371). At the district level, the other controls were rarely statistically significant. The only district-level significant results were found in the 1993–1994 value-added reading regression, in which the coefficient of the *TEACH* variable was positive and that of the *T1KIDS* variable negative. Given the lack of

APPENDIX TABLE 8
Relationship Between District Size and Amount of Title I Funding the District Receives

	1990–91	*1991–92*	*1992–93*	*1993–94*
Adjusted-R2 value for the regression of "Total Title I funding received by a district" against "Number of public and nonpublic students who receive Title I services"	0.8112 (95% C. I. 1080.629 - 1298.3)	0.6430 (95% C.I. 546.5697 737.9382	0.6365 (95% C.I. 555.5562 - 735.306)	0.6995 (95% C. I. 747.8123 - 980.5771)
Adjusted-R2 value for the regression of "Total Title I funding received by a district" against "Total number of public school students enrolled in the district."	0.8731 (95% C. I. 274.2636 317.0303)	0.7992 (95% C.I. 184.6521 225.857)	0.7983 (95% C.I. 199.9144 - 241.6195)	0.8726 (95% C. I. 184.6521 225.857

support from the other regressions, the implications from these two results should be taken cautiously. They imply that the more Title I money spent on teachers (as opposed to teachers' aides, supplies, administration, computers) the greater the improvement was on reading scores from the 1992–1993 school year to the 1993–1994 school year. The *T1KIDS* coefficient suggests that the more Title I students in a district, the less the value added to reading scores. This might be the result of district size (difficulties of running a Title I program in a large district) or from peer effects (too many fellow Title I students creates a disadvantaged learning environment). Both of these results, however, are only speculative and are not broadly supported across the entire set of regressions. At the district level, the effects of the control variables remains unknown.

At the individual level, the majority of the controls also remain mysterious. There are, however, two notable exceptions. One is the dummy variable for Black, non-Black. The *BLACK* variable consistently returns significant negative coefficients. This is supported across all cohorts and for both reading and math CTBS student achievement. The second control of note is for district average reading/math scores. This is positive and significant in both cohorts 1 and 3. This result suggests that students in districts with higher average CTBS scores will themselves perform better. It is plausible that peer effects are at work here – students who are surrounded by higher-scoring students will do better. The results for district average family income (INC) and percentage of Title I money spent on teachers (*TEACH*) were mixed. As can be seen in Appendix Tables 10 and 11, they had both positive and negative statistically significant variables. From the analysis here, it is impossible to conclude anything about their effects on student achievement. Revisiting the data with a focus on these variables might result in a better understanding of how family income and the percentage of Title I money spent on teachers affects the achievement of Title I students.

With one exception, the control for number of Title I students in a district (*T1KIDS*) was negative when it was significant. Though the evidence is not strong, if the impact is negative then it would have the same implication as noted at the district level: students whose districts have greater numbers of Title I students will not perform as well on the CTBS. Given the exceptions and the general lack of a significant coefficient either way it is not possible to draw conclusions about the effect of *T1KIDS*. It is also impossible to draw conclusions about the impact of the number of full time employees funded by Title I money (*FULLTIME*) since the coefficient for *FULLTIME* is not statistically significant most of the time.

APPENDIX TABLE 9

District Level Regressions: OLS Estimated Effects of Control Variables on Student Achievement on Reading/Math CTBS Achievement (p >ltl)

	INC	*BLACK*	*DIST CHAR*	*TEACH*	*TIKIDS*	*FULLTIME*	*PREVREAD / PREVMATH*
	District average family income	*Percentage of black students in the district*	*District Characteristic Dummy Variable (1 = More than one Title I school in district)*	*Percentage of Title I money spent by district on teachers*	*Number of Title I students in the district*	*Number of Full Time Employees (FTE) paid for using Title I money*	*Previous year's district average math/reading score*
Model A: Value Added [1]							
1993– 94. reading	—	--	—	2110.9 (.010)	-.00097 (.026)	—	—
Model B:Curren t Period							
1991– 92, reading	—	—	—	—	—	—	.6304 (.000)
1991– 92, math	—	—	—	—	—	—	1.010 (.000)

1992–93, reading	—	—	—	—	—	—	.2418 (.002)
1992–93, math	—	—	—	—	—	—	—
1993–94, reading	—	—	—	—	—	—	.6563 (.000)
1993–94, math	—	—	—	—	—	—	.5070 (.000)

Notes: The results here are only for those regressions where Title I money was considered, but the coefficients of the control variables were almost identical in the regressions in which ALLMONEY was used instead of T1MONEY. 1991 stands for 1990–1991 academic year, 1992 for 1991–1992 academic year, etc.

1 The dash indicates that the control variable was not statistically significant in this regression.

APPENDIX TABLE 10

Individual Level Regressions: Using a Value-Added Functional Form (Model A), OLS Estimated Effects of Control Variables on Student Achievement on Reading/Math CTBS Achievement (P>|t|)

	INC *District average family income*	*BLACK* *Dummy Variable (1 = Black, 0 = Non-black)*	*TEACH* *Percentage of Title I money spent by district on teachers*	*T1KIDS* *Number of Title I kids in the district*	*FULL TIME* *Number of Full Time Employees (FTE) paid for using Title I money*	*AVG READ/MATH* *District Avg. reading math scores*
Cohort 1						
1991–92 reading*	-.0004 (.006)	—	—	—	—	—
1992–93 math	—	—	13.813 (.019)	—	—	—
1993–94 reading	—	-11.703 (.000)	—	—	—	—
1993–94 math	—	—	-207.096 (.005)	.00018 (.008)	-225.480 (.000)	—

Cohort 3						
1991– 92 reading	—	-4.136 (.023)	-14.112 (.000)	—	—	—
1991– 92 math	—	4.290 (.020)	—	—	—	—
1992– 93 reading	—	-7.356 (.000)	-18.024 (.000)	—	—	.0765 (.019)
1992– 93 math	—	—	-13.214 (.002)	—	—	.0888 (.001)
1993– 94 reading	-.0004 (.025)	-7.980 (.005)	—	-.0004 (.021)	—	—
1993– 94 math	-.0004 (.001)	-9.128 (.000)	845.658 (.009)	—	—	—
Cohort 7						
1992– 93 math	—	-9.587 (.046)	—	—	—	—

Notes: No math test reported for cohort 1 in 1991. All regressions whose results do not appear here are left out because they returned no significant coefficients for the control variables.

APPENDIX TABLE 11
Individual Level Regressions: Using a Current Period Functional Form (Model B), OLS Estimated Effects of Control Variables on Student Achievement on Reading/Math CTBS Achievement (p > ltl)

	INC	*BLACK*	*TEACH*	*T1KIDS*	*FULL TIME*	*AVG READ/ MATH*	*PREV READ/ PREV MATH*
	District average family income	*Dummy Variable (1 = black, 0 = non-black)*	*Percent age of Title I money spent by district on teachers*	*Number of Title I students in the district*	*Number of FTE paid for using Title I money*	*District Average reading math scores*	*Student CTBS score in previous school year*
Cohort 1							
1991-92 reading	-.0006 (.000)	—	—	—	—	—	.5387 (.000)
1992-93 reading	—	—	—	—	—	—	.7910 (.000)
1992-93 math	—	-7.031 (.000)	—	—	—	—	.6533 (.000)
1993-94 reading	—	-13.253 (.000)	—	—	—	.1964 (.000)	.5933 (.000)
1993-94 math	—	-8.328 (.000)	—	.0001 (.032)	-124.090 (.014)	.1922 (.000)	.6168 (.000)

Cohort 3							
1991-92 reading	.00018 (.042)	-5.255 (.001)	—	—	—	—	.6390 (.000)
1991-92 math	—	—	—	—	—	—	.6654 (.000)
1992-93 reading	—	-7.131 (.000)	-13.003 (.001)	-.000038 (.016)	—	.1728 (.000)	.7207 (.000)
1992-93 math	-.00017 (.019)	-3.0007 (.044)	—	-.000042 (.004)	—	.1359 (.000)	.6240 (.000)
1993-94 reading	-.00037 (.010)	-8.194 (.002)	—	-.00034 (.030)	—	.2197 (.000)	.6438 (.000)
1993-94 math	-.00056 (.000)	-7.962 (.001)	—	—	—	—	.7138 (.000)
Cohort 7							
1991-92 reading	—	—	—	—	—	—	.5658 (.000)
1991-92 math	—	—	—	—	—	—	.6438 (.000)
1992-93 reading	.00069 (.010)	—	—	—	—	—	.6395 (.000)
1992-93 math	.00088 (.002)	-9.442 (.030)	—	—	—	—	.5607 (.000)

Notes: No math test reported for cohort 1 in 1991. All regressions whose results do not appear here are left out because they returned no significant coefficients for the control variables.

NOTES

1. Even though the "Title I" program was called "Chapter 1" during the years in which the data analyzed in this chapter were collected, the federal compensatory education program was renamed Title I during the Clinton reauthorization in 1994. Following Wong and Meyer (1998) this chapter will refer to the program as Title I throughout for simplicity.

2. The leading scholars on both sides of this debate can be found recently in three collections:

Gary Burtless, ed., *Does Money Matter? The Effect of School Resources on Student Achievement and Adult Success.* Washington, D.C.: Brookings Institute Press, 1996; Excellence in Education: Views on Improving American Education. *Economic Policy Review,* 4(1), 1–130; and "Symposium on School Quality and Educational Outcomes." *The Review of Economics and Statistics,* 78(4), 559–691. Readers interested in a good survey of current economics of education research (including school choice, standards-based reform, and other issues outside the scope of this chapter) should see the papers and discussions from the 1996 *Symposium on School Quality and Educational Outcomes* and at the 1997 Federal Reserve Bank of New York's *Excellence in Education Conference.*

3. Palmaffy's claim that the initial Title I program was ineffective is consistent with the prevailing opinion at the time, but cannot be supported directly with empirical evidence because no extensive, properly controlled cost-benefit studies were conducted.

4. Given these Title I allocation procedures, districts might have an incentive to have lower student achievement in order to gain greater Title I funding. If districts acted in this way, it would be very difficult to assess the benefits of Title I money. There is strong reason to believe, however, that districts did not act in this way. First, there are incentives working in the opposite direction. Districts want their levels of student achievement to rise in order to improve the image of those working in the district (i.e., when student averages go up, teachers, principals, and administrators all look good.) Second, the data from 1991–1994 suggests that year-to-year Title I funding did not vary significantly. Running regressions of period t money against period t-1 money resulted in R-squared values of >.95 (meaning that the previous amount of money explained almost all of the new amount of money) and coefficients fairly close to 1 (meaning that the amount of previous money is very closely related to the amount of current money). It is safe to conclude that the districts in this sample did indeed want to improve their students' test scores.

5. Assuming that extra compensatory funds are divided equally among Title I students overstates the "total compensatory funding per student" in Table 1. It is still a useful exercise, however, to see how total compensatory funding per student is distributed across districts. This does not mean that in some districts students are receiving over $7,000 in compensatory funding; it simply means that using this formula (with the limitations just mentioned) the result is $7,000 per student. It may be more useful to consider the median for this second measurement.

6. A set of regressions measuring the value added from 1991 to 1994 was also conducted, and this resulted in significant results for the youngest cohort. These results are discussed in the next section.

7. All periods are measured in academic years. When a single year is mentioned, it refers to the academic period that ends in that year. For example, "1993" refers to the 1992–1993 school year, which ends in Spring 1993.

8. The *Prospects* data set asked parents to estimate their "total family income from all sources" and place it in 1 of 10 intervals. To construct average family income, the midpoint of each interval was used. For the open-ended interval at the end, "$50,000 or more," the value of $75,000 was assigned. Although a more thorough treatment of the open-ended interval may be desirable, it is not likely that changing this value will affect the results for either Title I or total compensatory funding. In a study that used income data from the U.S. census, Kaestner & Fleischer (1992) used both an advanced model and an arbitrarily assigned value for the open-ended income interval and found no significant differences in their results.

9. To extend this research, the *Prospects* data set could be used more extensively to create better controls. Specifically, the construction of composite variables as created in Borman et al. (1998) would help in controlling for Title I participation, peer effects, and possibly the impact of individual teachers/schools. The controls used in this paper are primarily static student and district characteristics. Despite these limitations and the need for more thorough statistical analysis, the results are still a necessary first-cut, which can be used to focus continued research.

10. Specifically, using ln(income), ln(CTBS scores), and change-in-funding variables did not improve the results.

11. Both cohorts 1 and 3 were analyzed for the longer value-added period of 1991 to 1994. There were no significant results from the cohort 3 analysis. Cohort 7 was left out because they did not take the CTBS in 1994 and because they had substantially fewer observations for analysis.

12. Analysis using subsets of the data (e.g., greatest/least funding, family income, size, and achievement) proved inconclusive. Future analysis, therefore, might use data at the classroom or school level.

13. I have received helpful comments from Kenneth Wong, Allen Sanderson, D. Gale Johnson, Stephen Meyer, and members of the University of Chicago Undergraduate Honors Workshop.

14. A third constraint, requiring the availability of adequate control variables, was also important. Controls are discussed in Appendix D.

15. Specifically, this means that they must have indicated on the District Coordinator Questionnaire how much money they spent on Title I programs in the given school year.

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CHAPTER 4

SUSTAINING INVESTMENTS IN TECHNOLOGY
Strategies to Close the Digital Divide

Ronald E. Anderson

For most of the past two decades, schools have been going to great lengths to incorporate computer technology into their instructional programs.[1] The vast majority of this effort, however, has been devoted to building the hardware infrastructure of computers, peripherals, and network connections, much of this to keep up with an ever-changing market supplying newer and more capable computer-related equipment. Estimates of K–12 spending on educational technology suggest that nearly two thirds of all investments on technology have been for this technical infrastructure (McKinsey & Co., 1995).

While scarcely anyone questions the premise that technology has great potential value in education, in the past few years there has been a growing awareness that the quality of the technological implementations is more critical than the quantity. A report from the Educational Testing Service (Weglinski, 1999) concluded that some types of classroom technology use (e.g., instructional simulations) were correlated with higher National Assessment of Educational Progress (NAEP) scores, but the amount of use was not a determinant factor. The conventional wisdom in education now acknowledges that *how* students use the technology is much more important than how much. But what is much less understood is the role of *where* (in a broad sense) and *when* it is used. Specifically, the quality of the *context* for both the students using the technology in learning and for the support of teachers who guide their students in technology use is crucial. The purpose of this chapter is to show how recent research supports this claim about the importance of the learning context.

Variation in the quality of the contextual support for technology in schools may be the factor that produces the deepest digital divide in education. Because of compensatory programs like Title I, poorer American schools have almost as many computers per student as the wealthier ones. Nevertheless, other indicators of technology penetration and utilization reveal socioeconomic (SES) differences consistent with the popular notion of the digital divide. This chapter documents some of the gaps in U.S. education with respect to the quality of support, organizational climate, and other elements of the critical context for implementing educational improvements with the help of technology.

The following diagram (Figure 1) depicts the major elements of the context of technology-supported learning in schools. At the center of the system or structure is the classroom, where most of the learning takes place. Surrounding it is the school context with the key factors given in italics. Surrounding the school, represented by the oval, are the community, regional, and national forces affecting the schooling process. The three main contextual factors upon which this discussion focuses are given in italics at the top of the diagram: spending for technology, leadership, and technology support.

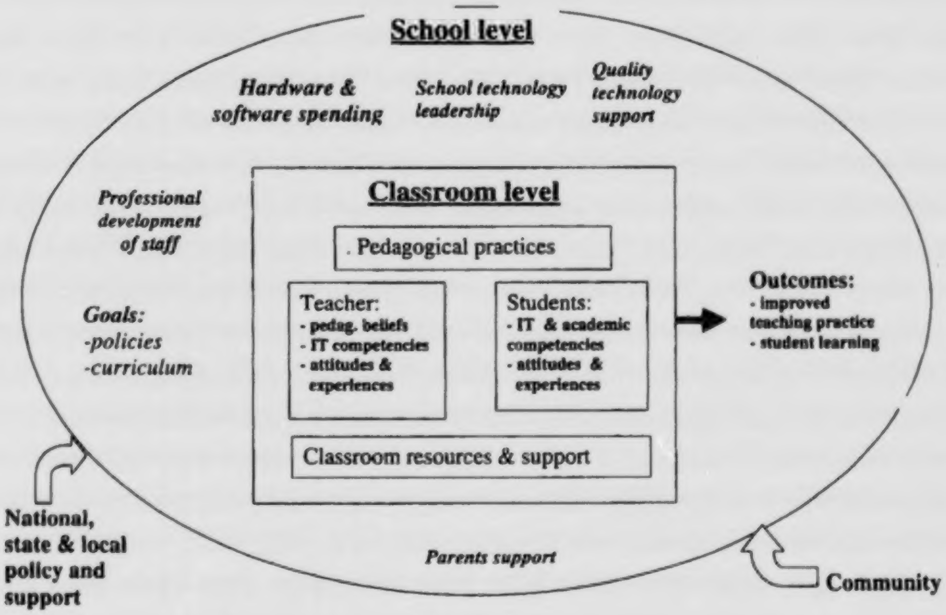
School level
Hardware & software spending
School technology leadership
Quality technology support
Professional development of staff
Goals:
-policies
-curriculum
Classroom level
. Pedagogical practices
Teacher:
- pedag. beliefs
- IT competencies
- attitudes & experiences
Students:
- IT & academic competencies
- attitudes & experiences
Classroom resources & support
Outcomes:
- improved teaching practice
- student learning
National, state & local policy and support
Parents support
Community

FIGURE 1
Contextual Structure of Technology-Supported Learning

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SAMPLE

Teaching, Learning, Computing: 1998 is a national survey with data from more than 4,000 teachers and 800 technology coordinators in 1,100 U.S. schools. The National Science Foundation and Office of Educational Research and Improvement (OERI) in the U.S. Department of Education jointly funded the survey. The survey incorporated both a national probability sample of schools and two types of purposive samples: a sample of schools with high-end technology presence and a sample of schools participating in 50 different major national or regional educational reform programs. Within each school, a probability sample of teachers was selected, and additional teachers were sampled based on their reputation for technology use or exemplary teaching. Altogether between three and seven teachers were selected per school. Roughly 75 percent of the 1,600 schools sampled chose to participate in the study, and the teacher, technology coordinator, and principal response rates averaged about 70 percent.[2] Most of the finds presented here are based only on the probability sample. The statistical descriptions characterize the entire U.S. school system in 1998.

TECHNOLOGY INVESTMENTS

Measurement

A substantial portion of the 17-page school technology coordinator survey booklet dealt with school investments in technology, measured in two ways: (a) the costs spent on hardware and connectivity, software, and training and support; and (b) what that expenditure bought in personnel time and effort and the numbers of various technologies and software products acquired. For example, personnel effort was measured by the number of hours per week spent by the school's technology coordinator and by specific other individuals on various support functions and by the number of occasions on which different types of formal training services were provided (e.g., tutoring, workshops) and the average number of teachers served. Costs were estimated for portions of salaries of those providing training or similar services and for release time that enabled teachers to participate in that training. Hardware and software acquisitions were measured in detail, and estimates were provided regarding the proportion (and cost) of inventoried equipment and material obtained in the past two years.

Finally, from the teachers' perspective, the survey measured opportunities for learning about technology that they experienced through both formal (staff development days) and informal (mutual support) mechanisms, their assessment of different aspects of ongoing support (technical support, instructional support, and help supervising student use of technology), and their access to various types of computer hardware and software for their own use and their students' use. Many survey items measure the outcome variables, that is, how broadly and how expertly teachers used technology in their instructional program.

By means of these new methods for measuring the amount that schools and their districts spent on hardware, software, and teacher support services, indicators were constructed to represent alternative strategies for schools to use technology. The technology coordinator was asked a variety of questions about a diverse array of available resources and expenditures.

Technology Expenditures

Using these measures, it is possible to estimate that the total technology expenditures in FY98 for the K–12 system were about $7.2 billion, which is roughly 2.7 percent of the total expenditures for that year. As shown in Table 1, the average school spent $113 per year per student on technology, with only $22.5 of that for teacher support services, about $8 for software, and the remainder for hardware. Table 1 gives the more detailed expense categories under each of these three broad areas. The estimated expenditures included materials purchased as well as installation and repair costs, salaries, and technology-related staff development costs.

These estimates of technology expenditures are generally consistent with those made by McKinsey & Co. in 1995 and by Quality Education Data in 1998. But previous studies did not collect the schools' technology coordinators estimates of what *should* be spent on each of the three expenditure categories. Figure 2 shows that although an average of 74 percent of the technology budget was spent on hardware, the school's technology coordinator (or other technology specialist) reported that they thought only about 40 percent of the budget should be spent on hardware. Likewise, the technology coordinators thought that the relative amount spent on software and support should be much greater. It is significant that the opinions of the technology coordinators were consistent with the conclusions of several major national studies, including the Presidents Committee of Advisors on Science and Technology (1997) and the U. S. Congress's OTA report of 1995.

The relative amounts spent on hardware, software, and support were essentially the same for the three main school levels. Figure 3 shows the average amounts spent on these three areas by elementary, middle, and high schools. As can be seen, high schools spend more than middle schools, which spend quite a bit more than elementary schools.

TABLE 1
Per-Student Expenditures in U.S. Schools, 1997–1998

Hardware	
Instructional computers	$42.4
Peripherals	5.7
Video production	1.1
Computer furniture	2.3
Local area networks	13.6
Internet	3.4
Computer maintenance	3.4
Total hardware	82.7
Software	
Individually purchased software	4.5
Site licenses	3.4
Total software	7.9
Support	
Salary for technology coordinator	11.3
Salaries for others providing training	4.5
Release time, training expenses	4.5
Other expenses for support	2.3
Total support	22.6
Grand Total	**$113.2**

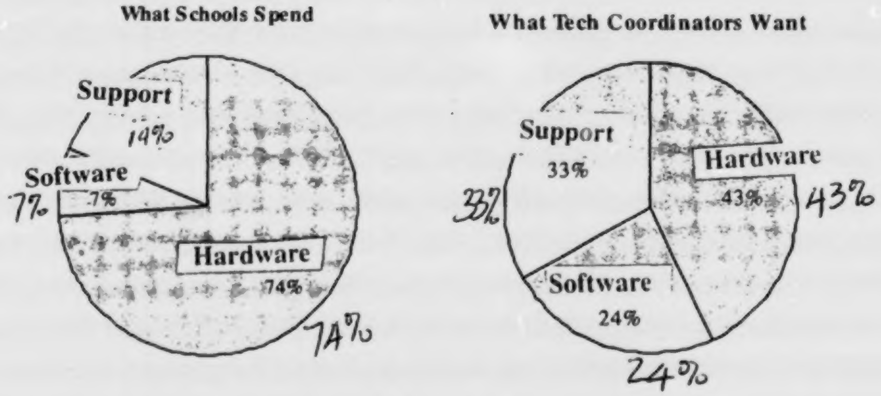

FIGURE 2
Comparison of Actual Expenditures with Desired Expenditures

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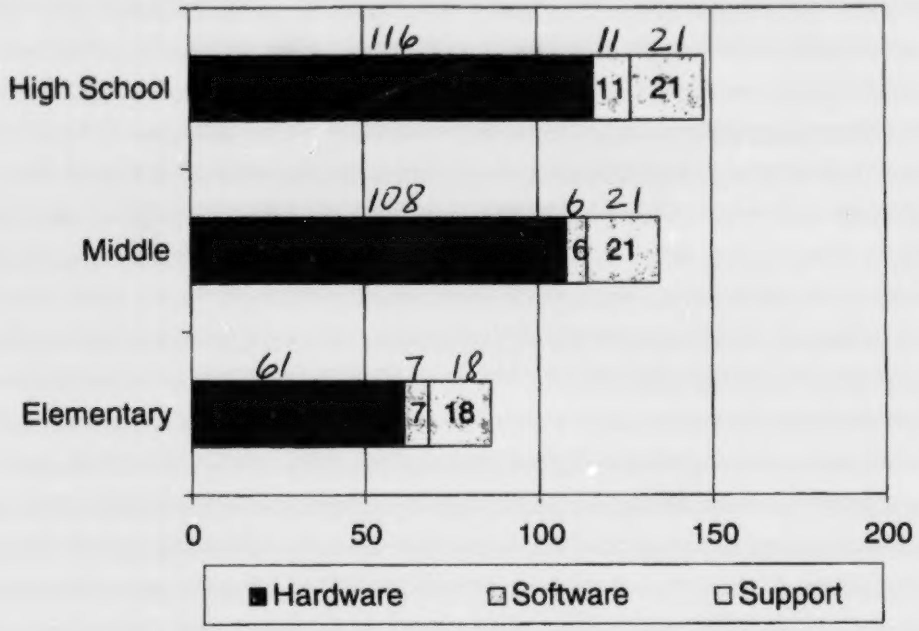

FIGURE 3
Per-Student Technology Expenditures (U.S. Dollars) by School Level

5-Year Spending Estimates

Although expenditures were only collected for the previous 2 years, by combining information on expenditures with information on inventories, infrastructure, and time spent, it was possible to estimate 5-year technology investments. This additional information included inventories of computer, software, and networking resources; number of computers able to access 20 types of software; and technology support persons' weekly time spent on seven types of training, coordination, and user support activities. The support estimates were extrapolated backward for an additional 3 years, whereas the hardware and software estimates were based on inventory estimates.

Figure 4 shows the 1-year spending on the left and the 5-year estimates on the right. An estimated total of $488 per student was spent in the previous 5 years, and the proportions were not significantly different than the 1-year expenditures. Thus, there is reason to believe that the longer, 5-year trends were somewhat similar to the 1-year estimates.

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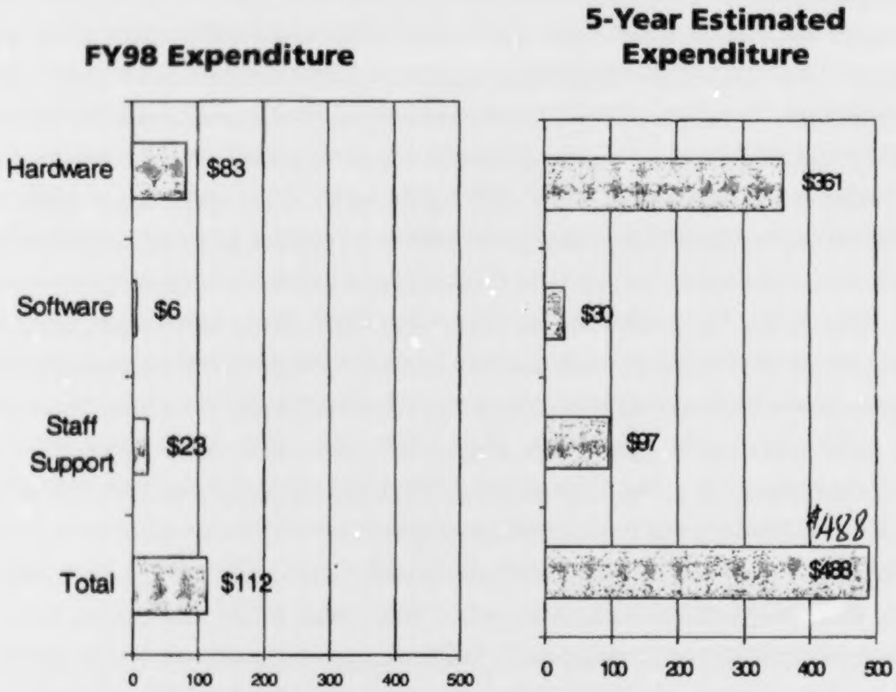
FY98 Expenditure

5-Year Estimated Expenditure

FIGURE 4
Average Per-Student Technology Expenditures for FY98 Versus 5-Year Estimates

District Budgets

In the United States some districts impose much greater control over school decisions than others. According to the technology coordinators, 46 percent of the funds for school technology (including hardware, software, and support) were from the district budgets, and 54 percent were spent out of the school budgets. Districts are more likely to be the source of funding for hardware, whereas schools are more likely to be the source of funds for software and support services.

Slightly more than half the schools (54 percent) do not have a technology budget for which they have sole discretionary authority. The percentage of schools with their own budget was essentially the same across all three grade ranges or levels. Figure 5 shows that having a technology budget did make a difference in how much money schools spent on technology. Those schools having their own technology budget spent 50 percent more on technology overall during the previous 5 years.

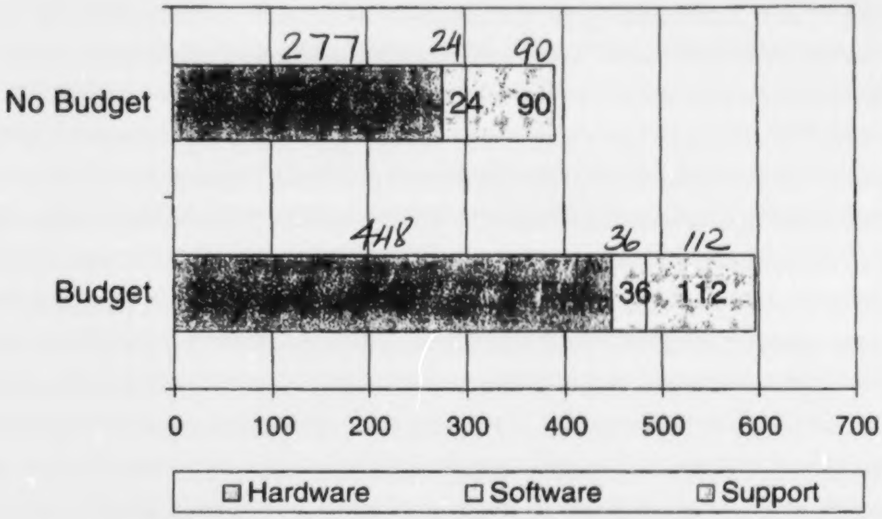

FIGURE 5
Technology Budgets for Schools With and Without Their Own Technology Budgets, 5-Year Per-Student Expenditures

The Digital Divide in Spending

Community Income Difference

Comparing the average spending in the lowest quartile on community income level (as measured by average household income within the school's zip code) to the highest quartile, the highest 40 percent of the schools spent well over twice as much as the lowest 10 percent (see Figure 6). This is very significant, because while big differences in computer density do not exist in schools across these income groups, the higher spending patterns of the wealthier schools may yield future inequities because of the higher current spending. Figure 6 shows that schools in higher income communities spent far more for technology support then did those in lower income communities.

Title I Eligibility Difference

A somewhat similar pattern was found when comparing schools by the percentage of their students that were eligible for Title I support. The schools were divided into four equal groups on the basis of the percentage of students reported to be eligible under Title I. Figure 7 shows the per-student expenditures for FY98 on hardware, software, and support; the results

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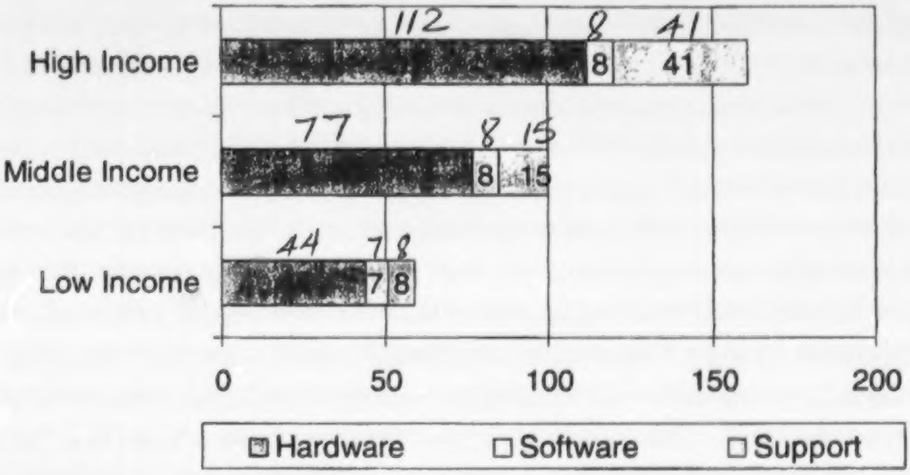

FIGURE 6
Per-Student Technology Expenditures by Average Family Income of the School's Zipcode

show that those schools with the fewest Title I-eligible students spent twice as much as the quartile of schools with the most eligible students. The quartile with the most Title I-eligible students were spending, on average, only $4 per student on support, which was only about one fifth of that spent on support by the schools with the fewest students below the poverty line.

If we look at the expenditures over the previous 5 years rather than the last year, a different pattern emerges (see Figure 8). The differences across the schools depending upon their Title I eligibility were not great: schools with the fewest Title I-eligible students had not spent more than other schools and thus deviated from the overall pattern. This group of schools tended to be mostly rural, larger than average, and more likely to be in the Midwest, which may explain their departure from the pattern of spending the most money on technology. Overall, the pattern is consistent with the finding that the student/computer ratio did not differ significantly by Title I groups (Anderson & Ronnkvist, 1999). It would appear that Title I and other compensatory funding programs over the longer run have tended to equalize the technology resource base or infrastructure across richer and poorer schools. Where the compensatory programs have not been able to close the digital divide is in spending for leading-edge technologies such as high-speed Internet access and multimedia components to computers (Anderson & Ronnkvist, 1999), which may account for the differences between the patterns found in Figures 7 and 8.

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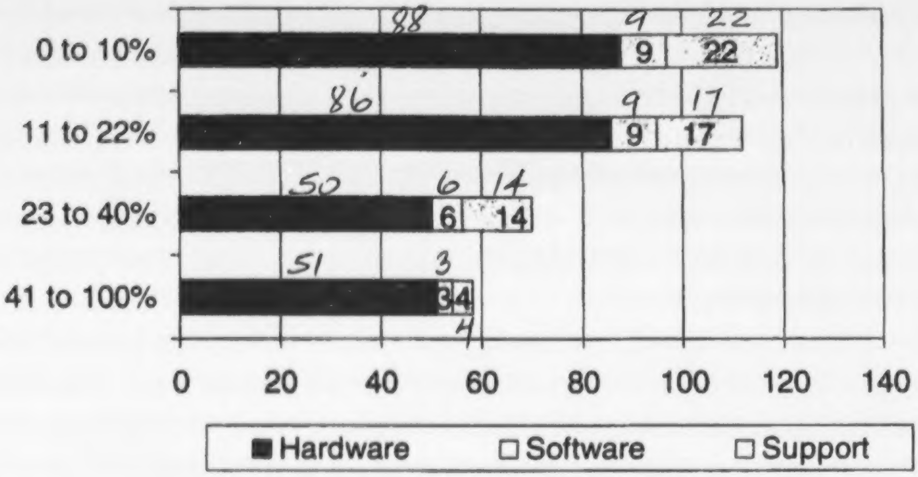

FIGURE 7
Per-Student Technology FY98 Expenditures by
Percent Eligible for Title 1

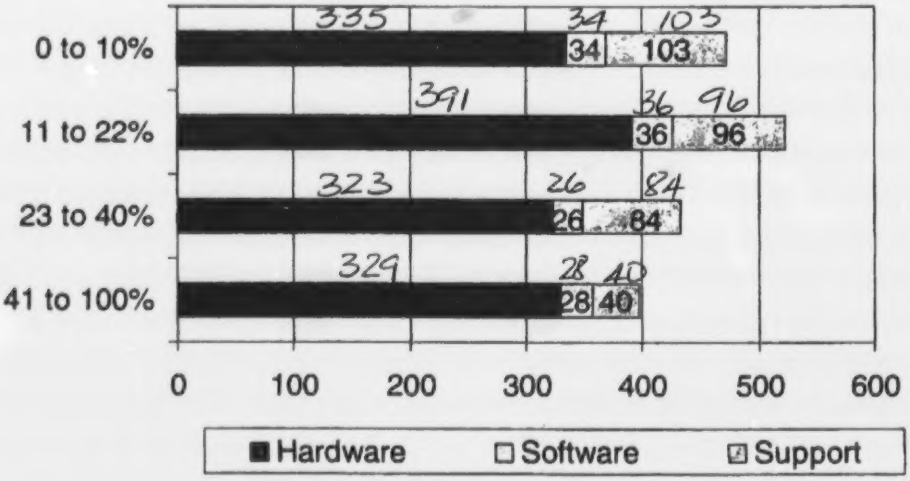

FIGURE 8
5-Year Per-Student Technology Expenditures by
Percent Eligible for Title 1

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The Relationship between Technology Spending and Teaching Practices

In addition to analyzing technology spending at the school level, technology spending can also be linked to individual teachers and their teaching practices. Anderson and Becker (2001) established some links between indicators of teaching practices and spending patterns. They found that for teachers in the Teaching, Learning and Computing (TLC) survey, spending on technology was to some extent random with respect to teacher use of technology and other indicators of impact. This was especially true of spending on hardware. Spending on software and support services was significantly correlated with indicators of teacher use of technology and instructional improvement. The effect of spending is not likely to affect outcomes directly so much as it is likely to help build the support structures and leadership that make the effects possible.

TECHNOLOGY LEADERSHIP

Colloquial and traditional models of leadership emphasize charisma and personal strength, but more valid and useful systemic models of leadership focus on interrelationships (Schultz, 2000), coping with complex change (Fullan, 1993), and the culture of a learning organization (Senge, 1990). The framework of the school as a learning organization (Leithwood & Louis, 1998) is particularly appropriate for analyzing technology leadership because change is so basic to contemporary technology management. In this analysis this perspective is applied to technology leadership, rather than viewing it as a set of skills (Kearsley & Lynch, 1992). Everyone associated with a school is a potential technology leader, but the principal stakeholders are the administrators and teachers. Technology leaders who view their school as a learning organization will attend not only to setting goals and coordinating activities, but also to designing and participating in learning processes for themselves and all others in the school. Technology leadership includes setting up processes for making all of the technology-related decisions. In this chapter, technology leadership is viewed as an attribute of schools rather than of individuals.

As an aid to identify all technology policy decisions, a taxonomy of educational technology leadership decisions was constructed (see Table 2). Decisions that pertain primarily to the infrastructure are distinguished from those that deal primarily with the instructional processes, although many decisions apply to both. The taxonomy divides decisions into six functions: strategic planning and goal setting, budgeting and spending, organization, curriculum, evaluation, and external relations.

Strategic Planning and Goal Setting

In addition to setting goals and policies related to technology, many have pointed to "vision" as essential to technology programs, contending that shared vision is critical to managing information technology in a school setting (Costello, 1997: Hoffman, 1996). From case studies of two high schools, Dexter (1999) concluded that successful technology implementation depended upon shared goals across various organizational levels. A recent study in Hong Kong by Nancy Law and associates (1999) found that leadership, especially at the school level, made a big difference in terms of pedagogical improvements in teaching and student learning. They concluded that a very important aspect of school leadership is "whether the school has established explicit technology policy goals and specific implementation plans for the current school year and beyond" (p. 115).

Not only do priorities have to be determined for different technology acquisitions, but they also need to be identified for instructional goals and desired learning outcomes. Aligning policies with these goals and priorities is important. For instance, a stated policy that the school is committed to equal access to technology could result in reduction of access discrimination. A more potent policy would specify more details of different types of access and specifically mention the digital divide with respect to income, race, gender, ability, and disability.

Budgeting And Spending

Many technology decisions concern budgeting and spending, including equipment, networks, software, and support services of all types. A Pelavin Research Institute report states that educational technology is unique in that it is not solely a labor, capital, or recurring material expense, but rather a hybrid of all these expenses (Pelavin, 1997). They argue that school technology should be in a separate budget category because of its unusually high start-up costs and ongoing requirements for professional development.

Not only does technology leadership require budgeting and spending decisions, but it also almost certainly necessitates fund raising. Sometimes the only way to support the costs of technology innovation is through external funding, which implies planning and writing grant proposals.

Organization

Numerous organizational structures have been designed for dealing with technology functions within schools. One of the most common ones in smaller schools is the creation of a single position of technology coordinator. Often the technology support tasks are spread across several positions. Irrespective of the formal structure, it is important that the

TABLE 2
Taxonomy of Educational Technology Leadership Decisions With Illustrative Policy Decisions or Actions

	Technology Infrastructure	*Instructional Practice With Technology*
Strategic plans, goal-setting, policies, vision and vision sharing	• Priorities for different types of hardware and software now and in the near future • Policy for equal access to technology?	• Planning for ensuring student learning of 21st century skills • Staff development policy in place
Budgeting and spending	• Equipment renewal plan. • Grant-writing and fund raising • Acquire assistive technology as needed	• Substantial share of the budget for support services? • Varieties of software acquired as needed • District funding support
Organizational structure and processes	• Technical support staff • Broad staff use of email and other technology for personal and professional activities • Technology committee	• Rewarding and encouraging staff. • Staff for instructional support services • Major professional development program for technology
Curriculum	• Accommodation of needs of diverse groups including at-risk students of all types	• Content standards for infusion of technology • Media literacy opportunities for all
Program evaluation and impact assessment	• Periodic measuring of resource utilization • Formative evaluations of implementations. • Monitor digital divide	• Regular monitoring of student learning indicators? • Evaluation of instructional practices?
External relations and ethical issues	• Build links with parents and community, e.g., home access to school server • Policy on filtering software	• Program for instructional content on Web • Intellectual property (e.g., Acceptable Use Policy) policy in place

administrative leadership reward and encourage staff for their participation in technology-supported projects. In addition, unless the top administrators in a school use the technology themselves (e.g., use email for communication with a variety of groups), other staff will be less likely to use the technology (Ritchie, 1996).

A formal technology committee with representation from teachers, administrators, parents, and students can be very effective. Czarnomski (1996) and VanSciver (1994) propose that a technology committee develop a mission statement for technology use, identify technology needs, oversee the technology budget, and plan staff development and training around technology. A technology committee also may help to mobilize broad support for the technology program (Musco, 1995).

Curriculum

Decisions need to be made about when and how students will learn new media literacy (technology-related skills) and use these skills in learning other subjects. Standards may be defined for technology skills that students should be able to do. Standards of good teaching practices may define useful approaches to improving teaching with the use of technology. The instructional program must also set policies on how to accommodate the needs of diverse groups, including at-risk students of all types.

Evaluation

Effective technology leadership will establish evaluation procedures to learn from ongoing experiences. Regular monitoring of infrastructure use is needed for planning purposes. Periodic measurement of student learning by means of a variety of alternative indicators will help to evaluate and refine different approaches to using technology in instruction. These different research functions will make it possible to evaluate the nature of any digital divide in the school.

External Relations

Technology leadership, like leadership generally, must build and maintain links between the school and other groups including parents, community organizations, and support organizations. Access of students and parents to school servers and to services through websites can greatly facilitate these relationships. In addition, technology leaders need to set policies to deal with ethical matters having to do with use of intellectual property and access to adult materials on the Internet.

The Consequences of Technology Leadership Decision Making

Each of the different actions or decisions identified as characteristic of technology leadership may have a measurable outcome in terms of the degree of technology integration in the school or other technology goals for the school. With data from the 1998 survey, Teaching, Learning, and Computing, it is possible to evaluate the extent to which some of these leadership indicators are associated with desired technology outcomes. Also examined are background factors that might be antecedents of leadership, such as type of school and demographics of the principal. The model tested considered factors like computer density and Internet bandwidth as mediating factors because they are both a consequence of technology leadership and facilitators of improved technology programs. The interrelationship among these different types of factors is shown in Figure 9. Technology integration depends directly upon technology leadership and infrastructure, which are determined to some extent by school demographic factors. The survey findings in this chapter are organized into three parts. The first section gives percentages for all U.S. schools on the adoption of technology-related policies and what proportion of schools possessed different technology leadership characteristics. Next, there is a breakdown of technology leadership by school demographic factors showing which types of schools have more or less technology leadership. Finally, the relationship between technology leadership and technology integration is tested (see Figure 9).

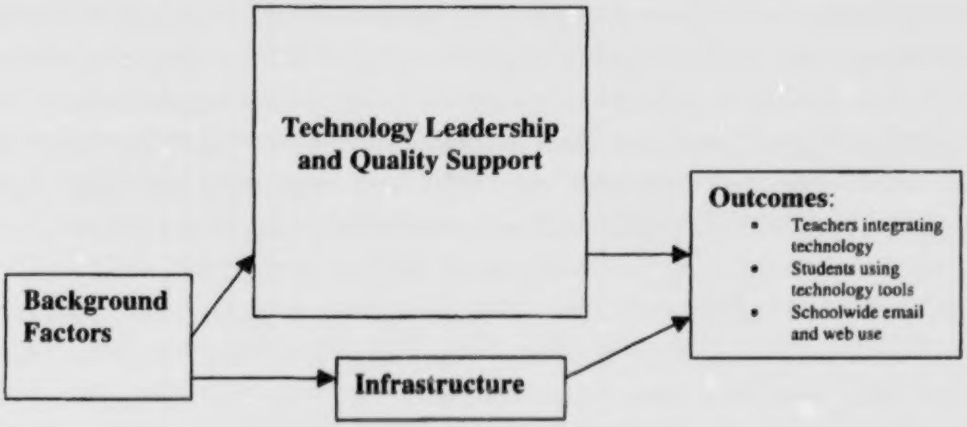

Technology Leadership and Quality Support
Outcomes:
Teachers integrating technology
Students using technology tools
Schoolwide email and web use
Background Factors
Infrastructure

FIGURE 9
A Model of Technology Leadership

INDICATORS

Technology Leadership

In developing overall measures of technology leadership, a large number of technology-related activities and attributes that the principal and technology coordinator reported about their school in the surveys were identified.[3] Eight indicators were selected to best represent the construct of school technology leadership. Other variables, such as the amount of technology spending within the previous two years, school technology goals, receipt of technology donations, and the presence of a technology coordinator position were dropped because of their low correlations with the remaining indicators of technology leadership.

The School Technology Leadership index constructed was the sum of the following eight organizational attributes that were present at the school:

1. *Technology committee*—whether a school had a computer technology committee.
2. *Technology budget*—a school had a budget for technology costs over which the principal or someone else in the school had sole discretionary authority.
3. *Principal days*—the principal spent five or more days on technology planning, maintenance or administration during the previous year.
4. *Principal e-mail*—the principal reported regular use of e-mail to communicate with at least two of the following three groups: teachers, administrative staff, and students.
5. *District support*—the district (or diocese) supported technology costs more than other districts, according to the principal.
6. *Grants*—the school or district had obtained a special grant in the last three years for an experimental program in which at least 5 percent of the funding was dedicated to computer-related costs.
7. *Staff development policy*—principal reports that the school had a policy of periodic staff development regarding technology.
8. *Intellectual property policy*—principal reports that the school had a policy about honoring intellectual property rights (e.g., copyrights).

These eight components of school technology leadership represent the organizational decisions, policies, or actions that have the potential to facilitate improved usage of information technology throughout the school. All of these eight attributes both lead to and result from an effective technology program in the school. In other words they are considered to be aspects of technology leadership because their main role is that of 'input' or contributor to the program.

Technology Outcomes

For this investigation several outcome measures were selected to examine the role of technology leadership on educational technology improvement. The three outcome indicators are (technology) integration, networked, and student tool use. Each of these indicators was constructed from a number of other indicators.

- *Integration* measures the degree of technology integration into the curriculum and teaching practices. It is based on the number of teachers who were integrating technology into various types of teaching activities, as reported by the technology coordinator.
- *Networked* is a measure of the extent to which teachers and others in the school used e-mail and the Internet for a variety of different purposes. The variable is the sum of the frequency of teacher and student e-mail and Internet use, not just the type of a school's networking facilities.
- *Student tool use* measures the extent to which students used computers during the school year to do academic work, including writing reports and essays; performing simulations in science and social studies, using spreadsheets and databases; and looking up information on CD-ROMS, the WWW, and other computer resources. Each of these three indicators were used separately in model estimations.

Findings on the Role of Leadership in Technology Integration

Overall school technology leadership as measured by summing the eight technology leadership attributes was stronger than the infrastructure indicators in predicting technology pervasiveness in schools. The data reveal that technology leadership has a significant and positive correlation with each of the dependent variables:

a. integration of technology in teaching,
b. network and Internet use, and
c. student use of application tools.

Multiple regression models on each of the three dependent variables not only regressed leadership on each technology outcome variable, but also regressed four additional infrastructure variables:

a. student/computer ratio—the standard measure of computer density,
b. whether or not the school had T1 (high-speed) Internet access,
c. the school's hardware expenditures during the previous two years, and
d. the school's software expenditures during the previous two years.

Only two variables, overall technology leadership and student/computer ratio, were statistically significant predictors across all three outcome variables. Leadership was the strongest predictor for all three. T1 Internet access and software expenditures were significant predictors, but only for the outcome variable "networked." These results generally support the main part of the path model depicted in Figure 9, namely a positive effect of technology leadership on the integration of technology in schooling.

Leadership Implications

Infrastructure is important but for it to become part of the school culture, school leadership is necessary. For technology to become an integral part of a school, it not only is necessary to help teachers use the technology but to also involve administrators in its use. The importance of training to develop technology-proficient teachers has long been recognized in the educational community. These findings suggest that administrative leadership and decision-making may be equally important in maintaining a successful technology program.

The concept of school technology leadership as developed in this chapter recognizes that a variety of administrative actions are necessary for effective technology applications to pervade the school community. Charismatic administrators and enthusiastic teachers contribute to technology integration, but it is even more essential for a school to become a "technology learning organization," where administrators, teachers, students, and parents work together to adapt new technologies for enhanced learning.

QUALITY OF TECHNOLOGY SUPPORT

Technology support in schools can be categorized according to its content and the method by which it is delivered. For the purposes of this chapter, a distinction is made between instructional and technical content. The former is concerned with pedagogies, instructional strategies, and implementation of different teaching methods. The latter, however, encompasses all aspects of the technology, such as the operation and troubleshooting of hardware and software, which are generally not related to a specific instructional method. Knowledge of both types of content is of critical importance for teachers intending to use technology effectively in the classroom; they must have the ability to operate Information and Communication Technology and use it as a pedagogical tool—one that supports both instruction and assessment. In short, teachers are expected to develop a complex set of skills and reasoning processes, which require considerable, broad quality support.

The other dimension of technology support concerns the methods or types of resources used to deliver technology support services. These services include not only facilities and support staff, but also professional development, one-on-one consulting, and incentives. Each cell in Table 3 shows an example of how these types of support services differ for instructional and the technical content. Developing a technology support environment that encompasses all the resources depicted in Table 3 requires considerable effort and expense. What is the payoff of providing more opportunities for teachers to learn about the necessary technical and instructional aspects of instructional technology? What might school leaders hope to achieve by offering ongoing technical support, including sufficient access to hardware? Although there are some descriptive data on different models of technology professional development (Anderson, 1998; DeWert & Cory, 1998; Milone, 1998), there is an absence of specific descriptive or impact data. The TLC survey in 1998[4] provides this important descriptive data on technology support elements in America's schools.

Definition and Prevalence of High-Quality Technology Support

The importance of professional development for schools with technology programs has been noted by the CEO Forum, a group of business executives and school leaders concerned with the use of technology in America's schools. Their 1999 report provides guidelines for schools developing high quality technology-support programs, and includes an index—the STaR Chart—for assessing adequacy of school technology programs. It emphasizes four key elements of a successful technology program. First, the report stresses the importance of helping teachers to integrate—not just operate—technology. Second, it calls for regularly scheduled technology-oriented development sessions as well as for "just-in-time" and one-on-one learning opportunities; development opportunities include help from individuals with classroom and curriculum experience. Third, it suggests the need for teachers to have access to technology resources near their work place. Finally, the CEO Forum's professional development program recommends that attempts be made to involve most of the teachers in the school. The CEO Forum's (1999) STaR Chart identifies and elaborates

TABLE 3
Technology Support Content by Resource Type Used to Deliver Technology Services to Teachers

	Facilities	*Staff for Assistance and Necessary Services*	*One-on-One, Personal Guidance, Help*	*Professional Development (scheduled sessions)*	*Incentives*
Instructional content	Content-area specific software, communications access to pedagogical expertise	Instructional expertise and background of people providing support	Guided practice, consultation for curriculum integration	Pedagogy, models; implementation strategies	Release time for support focusing on instructional content
Technical content	Network and Internet access; hardware, software	Technical support; help desk; network services	Computer experts for trouble-shooting	Operating equipment, general software	Release time; free hardware, software and network access; anticipation of expert status

upon quality technology-support programs in other ways, but these criteria represent the essence of their framework.

To analyze the adequacy of teacher support programs, these criteria were applied to questions from the teacher survey. By relating specific indicators to each criterion, an index was produced with which to measure the quality of technology support available to teachers. The criteria included:

a. customized one-on-one help;
b. widespread teacher participation in ongoing, technology-oriented professional development activities;
c. professional development content that emphasizes the instructional, and not just the technical, needs of teachers; and
d. the access and skills of teachers to evaluate and use appropriate technology resources.

The first of these four quality aspects, "access to one-on-one help," was measured by data from school technology coordinators. All of the other indicators were based on teacher reports. While this framework and the CEO Forum Chart are defined at the level of the school, the data are analyzed primarily at the level of the teacher. Teacher-weighted data was used throughout because the teachers themselves best determine the adequacy of support. Some groups of teachers may not be nearly as well supported as others and thus, asking teachers about their perceived support experiences is arguably more accurate than relying on an administrator's estimate. The aggregate teacher responses reported here give a profile of the adequacy of school technology-support programs overall.

Access To One-On-One Personal Guidance and Help

The first dimension is based on the idea that quality technology support should provide teachers with customized one-on-one help. Technology coordinators were asked about the number of occasions that teachers in their school had received individualized attention during the 1997–1998 school year. Customized computer support includes technology instruction in the format of direct tutoring as well as support in the form of one-on-one or small group sessions. In order to create a ratio representing the number of occasions per teacher, the number of reported occasions was divided by the total number of teachers in the school. This ratio was then recoded into a dichotomous variable where a value of "1" indicates this ratio was .23 or greater and a value of "0" indicates the ratio was less than .23. This cut-off point denotes the 70th percentile.

Widespread Teacher Participation in Technology Professional Development Activities

The second dimension, teacher participation, reflects the degree of teacher participation in schoolwide technology professional development activities. This indicator was created from information given by teachers about how frequently they discussed computers, software, or the Internet with other teachers at the school. Teacher participation was given a value of "1" if teachers said the discussions took place one to three times per week or almost daily; otherwise, a value of "0" was assigned. Thirty-three percent of the teachers indicated they had discussions with other teachers about computers, software, or the Internet either daily or at least one to three times per week.

Professional Development Content Focused on Instruction and Integration

The third dimension of high-quality technology support emphasizes the integration of computers into the classroom, as opposed to just their operation. This indicator concerns the content of the professional development activities attended by teachers. If teachers indicated that they had attended a professional development session in which the integration of computers into instructional activities was a central topic, this indicator (content) was given a value of "1." Otherwise, content was coded as "0." Overall, about 32 percent of the teachers surveyed attended a professional development session in which the central topic was how to integrate computers into instructional activities.

Access To Resources

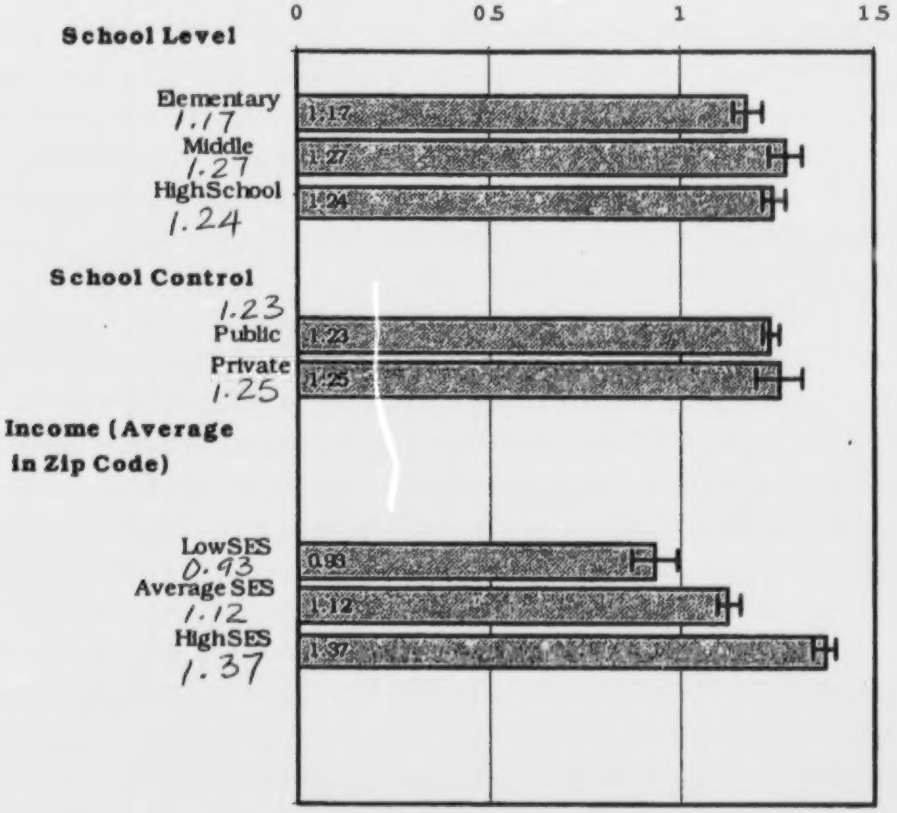
The fourth dimension of high-quality technology support captures the argument that teachers should be provided with access to appropriate technology resources. Full teacher access to technology resources was given a value of "1" if teachers had seven or more of these resources available to them; otherwise they were given a value of "0. "

Overall Quality Support Index

To create an overall index of a high quality technology-support environment, the four dichotomous variables were summed. Teachers scoring either "3" or "4" were deemed to be in schools offering high-quality technology support. Those scoring "0" did not have any of the support dimensions present at a high enough level to receive a score in our index. Only 13 percent of teachers were at schools having at least three support dimensions in place. Teachers indicating the presence of two or fewer (2, 1, or 0) dimensions in their schools were, for the most part, equally distributed; about one-third fell in each category.

Variations in Quality Technology Support

Figure 10 compares the quality technology score across school level (elementary, middle, and high), school control (public or private), and



Notes: The Error bars represent +/- one Standard Error of the Mean for each bar.

FIGURE 10
The Quality Technology Support Score Broken out by School Characteristics

SES (based on zip-code location of school). As noted earlier, the quality technology-support score ranges from "0" to "3" where "3" indicates the presence of either three or four quality dimensions.

Figure 10 shows that elementary school teachers reported slightly fewer dimensions of support in place than did their colleagues working in middle schools and high schools. Teachers in public and private schools had essentially the same number of dimensions in place. The most striking finding is that teachers in schools located in high SES areas have significantly higher quality technology support than do those in average SES and low SES areas. In other words, teachers in schools located in higher SES

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areas are more likely to have a greater number of quality dimensions available to them. Dexter, Anderson, and Ronnkvist (in press) test several models in which the quality support index and other contextual variables were used to predict three different outcome measures. They found that the quality of technology support had an impact on all three aspects of teachers' uses of technology. Teachers in schools with high-quality technology support use technology more frequently and in a variety of ways. Furthermore, quality technology support can influence teachers to increase their use of technology over time. These findings support previous claims of a link between the quality of technology support and the quantity and quality of actual use of technology by teachers.

CONCLUSION

Technology support in America's schools typically comprises access to equipment, dedicated staff, and professional development programming. This support is profoundly resource dependent, as evidenced by the wide range of roles adopted and number of hours worked by those involved with educational technology. Data from the 1998 Teaching, Learning, and Computing survey indicate that teachers' use of technology is positively related to the degree of quality support. Technology leaders should plan carefully to provide a complete set of technology support services, including all of the dimensions identified in Table 3: facilities, staffing, personal assistance, professional development programming, and incentives.

When technology support is designed with the instructional needs of teachers in mind—namely, creating convenient access to necessary resources, providing individualized support, training teachers to integrate technology into the classroom, and providing resources as incentives—the effect on use is pronounced. This underscores the need for a systematic approach to creating support. Elements need to be provided and coordinated into a larger comprehensive view of what teachers need to make use of technology as an instructional tool.

Title I programs have made a large difference in the past few years in helping many schools build their technology programs. But with respect to *new* technologies, the digital divide remains, and may be widening. Part of the problem is that the effective life of the new technologies for the society as a whole continues to shrink. Technology gets cheaper, but it may get obsolete more quickly. Therefore, the most effective investments will be in developing an ongoing, stable organization around technology. It is not always obvious what such an organization will look like, but a most essential aspect is that the use of technology should spring not from external pressures but from the belief that it is the best way to get many things done, especially in accelerating learning.

The empirical data reveal that money spent on equipment alone is somewhat randomly associated with indicators of instructional improvement. But spending on software and technology support is associated with pervasive technology integration. These analyses do not confirm that there is a direct effect of spending on instructional reform. What is plausible, however, is that spending is effective only if there is quality technology leadership and broad quality support for teachers in their use of technology. What do these findings imply for the digital divide? The divide cannot be closed without infusions of funding for both resources *and* technology leadership. It is a leadership that needs to pervade the school and help build a quality technology-support system.

NOTES

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2. Additional details can be found at http://crito.uci.edu/tlc/.
3. Details on the definition and construction of all of the variables used in this study are given in Anderson and Dexter (2001).
4. See http://crito.uci.edu/tlc/ for more information.

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SECTION II

ACCOUNTABILITY

CHAPTER 5

THE ROLE OF THE STATE IN STRENGTHENING TITLE I PROGRAMS

Margaret E. Goertz and Janet Kroll

In 1994, Congress passed the Improving America's Schools Act (IASA).[1] This legislation created major changes in Title I of the Elementary and Secondary Education Act—an $8-billion program that provides additional funding to schools with large concentrations of poor children. The new law was developed in response to a series of concerns about the operation and impact of the Title I program over the previous 25 years, including low expectations for educationally disadvantaged students, an instructional emphasis on basic skills, isolation from the regular curriculum, and a focus on procedural compliance rather than academic outcomes (U.S. Department of Education, 1993). Researchers, policymakers, and advocates concluded that a new federal approach was required to improve education for all students—one built around a framework of standards-based reform that is integrated with, rather than separate from, state and local education reform initiatives.

The new framework embodied in IASA gives states a prominent role in Title I. States are expected to establish challenging content and performance standards, implement assessments that measure students' performance against these standards, hold schools and school systems accountable for the achievement of all students, and take other steps to promote programmatic flexibility and to foster instructional and curricular reform. States are also expected to align their Title I programs with these policies. Specifically, Title I requires that:

- by 1997-98, states establish or develop criteria for local school districts to establish challenging *content and performance standards* in at least reading and mathematics.[2] The standards for Title I students must be the same as those for non-Title I students if the state has standards for general education.
- by 2000-01, states develop or adopt high quality annual *assessments* in at least reading and mathematics that measure learning of students served by Title I. The assessments must be based on the state's content and performance standards and, as with standards, if state assessments exist, they must be used for Title I. Unlike earlier requirements, the assessments do not have to be administered to each student served by Title I. Rather, states may assess a sample of students in as few as one grade in each of three grade intervals (Grades 3–5, Grades 6–9, Grades 10–12).
- states define and establish criteria for measuring "*adequate yearly progress*" for Title I schools and districts. Measures of progress must include the annual state assessment and may include other measures, such as attendance and dropout rates. Progress may be measured of (whole) schools and districts instead of students served. Schools and districts that fail to make adequate yearly progress for two consecutive years will be identified for improvement.

This chapter uses data collected from intensive case studies of 10 states,[3] 23 districts,[4] and from other documents to examine the extent to which states have developed and implemented policies that meet Title I criteria and how states and localities use these policies to leverage and support instructional change in low-achieving schools. We also identify some challenges that states and local school districts face as they strive to foster continuous learning for low-achieving students.

STATES' IMPLEMENTATION OF TITLE I'S STANDARDS-BASED REFORM COMPONENTS

A central premise in Title I is that aligning federal resources and policies with state and local reforms will reinforce and strengthen efforts to improve teaching and learning for all students, including those at risk of school failure.[5] Thus, for Title I to succeed in improving the educational outcomes of special-needs students, states must establish high academic standards, develop rigorous assessments aligned to these standards, and design measures of continuous progress that provide incentives to raise the achievement of all students. To what extent are states meeting these expectations? What do state standards and assessment and accountability policies look like, and have states aligned these policies with their Title I programs? How much variation exists across state policies and why?

Content Standards

In 1999, every state except Iowa was in the process of developing or implementing standards in at least mathematics and language arts; 44 states had developed standards in the four core areas of language arts, mathematics, science, and social studies (*Education Week*, 2000). Standards are well established in six of our ten study states; they are under development or revision in the other four. Respondents in these states report that their standards are (or will be) used for Title I.

The content of standards, including the knowledge framework, level of skills, and specificity, varies from state to state and often by subject matter within a state (compare, AFT, 1998; Massell, Kirst, & Hoppe, 1997; McDonnell, McLaughlin, & Morison, 1997). While state standards generally reflect national standards (such as those of the National Council of Teachers of Mathematics), some states have adopted only broad learner outcomes that emphasize general knowledge, skills, and attitudes students should have by the time they graduate from high school. Other states are developing student content standards or curriculum frameworks in specific disciplines. State standards also vary on how many grade levels they cover (e.g., standards in every grade vs. periodic benchmark intervals every few years). Though the organization of subject matter and emphasis of pedagogy may vary, state standards are overwhelmingly academic. The standards broaden the knowledge and skills required within a subject matter area, and are designed to require that students apply or use the knowledge to solve problems, construct projects, or engage in other complex tasks (McDonnell, McLaughlin, & Morison, 1997).

Many people contend that the rigor of the standards differs across states as well. External evaluators, including advocacy groups and media organizations, have judged the quality of state standards. These groups, however, have not used the same measures to assess the quality of state standards and do not rate the quality of standards consistently. This discrepancy is illustrated by the different score cards contained in the American Federation of Teachers' *Making Standards Matter* (1998), Education Week's *Quality Counts '98* (1998), and the Fordham Foundation's *The State of State Standards* (Finn, Petrilli, & Vanourek, 1998) reports.

Differences in the structure and substance of state content standards are rooted in states' political culture (a strong state role in education versus a strong tradition of local control) and ideological disputes over what constitutes good mathematics and English/language arts learning and instruction. Although this variation has implications for the expectations established for schools and school districts, the U.S. Department of Education does not approve state standards (though it does approve the standards-development process). Instead, it depends on local public pressure and political processes to ensure high-quality standards.

Assessments and Accountability

Title I uses state assessments to measure progress and to serve as the centerpiece of its accountability system. While Title I schools and school districts are required to maintain adequate yearly progress (AYP) toward state standards, states have considerable discretion in how they assess students and how they measure and define student progress.

Table 1 summarizes the major standards-based reform policies in the 10 study states in 1999–2000. Title I students are expected to participate in state and district assessments in all of our states; none had separate assessment programs for these students. But only five of these had aligned their Title I and state accountability systems. The other five states had separate state and Title I accountability systems. Nationally, only 23 states reported using the same accountability system for Title I and non-Title I schools (U.S. Department of Education, 2000).

State assessments differ in the students assessed (individual students vs. "matrix sampling"), the grade levels at which they are assessed, the kinds of tests used, and the subject areas selected. Some states are using matrix sampling as a way of obtaining reliable results on performance-based and open-ended items without an unreasonable test burden, but these assessments do not provide reliable individual level data for parents or teachers. The desire for individual student results has provided an impetus for some states, such as California and Colorado, to make individual test results a mandatory component of state testing systems, and for other states, such as Maryland, to support the development of a national test. Most states, on the basis of their statewide assessment and accountability designs, test both mathematics and reading and include those results in their AYP measures. Kentucky, Maryland, and Michigan test students in subjects besides reading and math, such as science and social studies, when measuring progress for Title I. At the other end of the spectrum, Pennsylvania is seeking a waiver to assess students only in the subject(s) for which they receive Title I services.

While many of the study states include only a few grade levels in their formal accountability systems, some require or give local districts the option of using commercial assessments in alternate grades. For example, Kentucky and Maryland administer the Comprehensive Test of Basic Skills (CTBS), and Minnesota requires districts to select commercial tests in grade levels that are not tested by the state. Other states, such as California, Florida, and Texas, assess each grade level between Grades 3 and 8. States also differ in the mix of formats they include in state assessments: multiple choice questions; short- or long-answer questions; performance items that ask students to perform a task or experiment; and portfolio assessments, a collection of a student's classroom work that shows their progress over time. Finally, states are at different stages of aligning assessments with their content standards. Some states, such as Kentucky, have high-quality assessments aligned to standards in all the appropriate grade intervals. Maryland has elementary- and middle-school level tests that are aligned to state standards, but it is in the process of changing its high-school assessment—currently a functional test. Florida and Texas, on the other hand, are in the process of upgrading their entire state assessment systems to measure student performance on their new, more challenging standards.

State accountability systems create incentives for schools and school districts to focus on student achievement and continuous progress. The type and strength of these incentives are determined in large part by the design of the accountability system, particularly the measures of adequate progress, who sets what goals for the system, and the consequences of meeting (or not meeting) these goals. State accountability systems vary along all these dimensions.

States may measure annual progress as a fixed, set amount for all schools or as a relative amount of gain based on each school's past performance and, perhaps, distance from state goals. Two of our study states, Florida and Texas, use absolute measures of progress—that is, performance thresholds that all schools must pass to demonstrate satisfactory progress. For example, for a Texas school to be rated "acceptable" in 2000, it had to have at least 50 percent of students in each subgroup (grade level, poverty, and race/ethnicity) pass the state assessment in reading, writing, and mathematics, hold the dropout rate to 6 percent or less, and maintain a student attendance rate of at least 94 percent. These performance targets have escalated each year since 1995. The incentive to improve that is provided by absolute measures depends on how high the target is set, and how rigorous the assessments are that measure whether schools and districts have met this target.

While *absolute measures* focus on school achievement of state performance goals, the use of *relative criteria* emphasizes continuous yearly improvement. Seven of our study states measure progress by gains. For example, Colorado focuses on *annual increases in the number* of students who are becoming proficient, rather than on having a set number reach proficiency. Nebraska and Pennsylvania measure progress by the number of students moving to higher performance categories. This measure includes the percentage of students moving from below the standard to meeting the standard, or the percentage of students moving from meeting the standard to exceeding the standard. Kentucky and Maryland measure progress toward absolute state goals. Maryland expects schools to make sta-

TABLE 1
State Standards, Assessment, and Accountability Policies, 1999-2000 Ten Study States

	CA	*CO*	*FL*	*KY*	*MD*	*MI*	*MN*	*NE*	*PA*	*TX*
Standards[a]										
ELA	X	X	X	X	X	X	X	X	X	X
Math	X	X	X	X	X	X	X	X	X	X
Science	X	X	X	X	X	X	X	X		X
Social Studies	X	X	X	X	X	X	X	X		X
Assessments										
ELA	X	X	X	X	X	X	X		X	X
Math	X	X	X	X	X	X	X		X	X
Science	X	X		X	X	X				X
Social Studies	X			X	X	X				X
Grade Levels Assessed										
ELA	2-11	3,4,7,10	3-10	3,4,6,7,9,10	3,5,8	4,7,11	3,5,8		5,8,11	3-8, 10
Math	2-11	5,8,10	3-10	3,5,6,8,9,11	3,5,8	4,7,11	3,5,8		5,8,11	3-8, 10
Science	9-11	8		4,7,11	3,5,8	5,8,11				8
Social Studies	9-11			5,8,11	3,5,8	5,8,11				8
Accountability: Student										
Promotion/Retention		X[b]								
Graduation			X		X	X[c]	X			X

Accountability: School									
Ratings	X	X[d]	X	X	X	X			X
Rewards	X		X	X	X			X	X
Sanctions	X		X	X	X	X			X
Assistance to Low-Performing Schools:									
State: Required									
State:Discretionary	X		X	X	X	X			X
Local: Required					X				
Alignment of State and Title I Policies	X		X	X	X				X

Notes: [a] *Education Week* (2000), p. 72.

[b] Third grade students may be held back in reading.

[c] State endorsements on high-school diploma.

[d] Title I schools only.

tistically significant progress toward the goal of having 70 percent of their students pass the state assessment. Unlike fixed measures, relative measures of AYP generally demand improvement of both low- and high-performing schools.

Not all states hold schools and school districts accountable for the attainment of state-established performance goals. States with strong traditions of local control have developed accountability systems that emphasize local standards and local reporting (e.g., Nebraska), or that use state-approved district plans to hold districts accountable for improving student performance on both district and state standards (e.g., Colorado and Pennsylvania). These weaker state accountability policies provide fewer incentives and less state guidance for improving student achievement, school performance, and district performance. As a result, the district determines the nature of the accountability system. California and Colorado provide some examples. While the Colorado districts in our sample were reform leaders, none had developed strong accountability systems on their own, nor had they developed any formal interventions for low-performing schools. In contrast, two of our California study districts were implementing comprehensive standards-based assessment and accountability systems, complete with a system of rewards, sanctions, and support.

Finally, states attach different consequences to their general accountability systems. These consequences range from the public reporting of student, school, and school district performance that are intended to generate parental and public pressure for reform ("low stakes" accountability) to state intervention in school and district governance ("high stakes" for school systems) and withholding high-school diplomas ("high stakes" for students). Many states require low-performing schools to develop corrective action plans for low performance and provide technical assistance with this planning process. In some states, schools or districts that fail to improve student performance are subject to additional sanctions: students are allowed to transfer to other schools; staff are reassigned or dismissed; and the state may take over schools or school districts, withdraw state accreditation, or close or merge schools or districts. High-stakes state accountability systems carry with them more incentives to change, while low-stakes accountability systems depend more on local districts to define and carry out reform.

State Strategies for Building Local Capacity

Under IASA, states are responsible for providing support to Title I schools and to school districts that are identified as in need of improvement. The recent *National Assessment of Title I,* however, found that the capacity of states to provide this support directly is limited (U.S. Department of Education, 2000). Most of our study states offer assistance to schools and school districts in need of improvement, but only a few of the states require their districts to assist low-performing schools. As with the national picture, requests for assistance significantly exceed the capacity of state departments of education to respond. Our study states, however, had adopted a set of strategies to build local capacity (Massell, 1998a, 1998b). The four major strategies are summarized below.

First, state departments of education have moved from their traditional regulatory and compliance roles to one of providing districts and schools with technical assistance and professional development. But they are doing so by building an external infrastructure, rather than by delivering these services directly. This external infrastructure includes intermediate education units, regional centers, professional associations, universities, and networks (e.g., organizations that improve the knowledge and skills of participating educators or deploy teachers and other experts to assist local practitioners).

This first strategy focuses on increasing the quantity of professional development and professional support. A second strategy entails states setting professional development and training standards to improve the quality of these services. Colorado and Maryland, for example, have developed state professional development standards that mirror standards promulgated by the National Staff Development Council. States use their standards as criteria for evaluating applications for professional development grants, including professional development providers on approved state lists, and for qualifying local professional development activities for recertification credits.

A third capacity-building strategy has been to develop curriculum frameworks and other materials to help local school districts and educators implement state content standards. Frameworks developed by states such as California, Florida, Kentucky, and Michigan provide more detailed objectives and include models of good teaching, instructional materials, and assessment. Some states have also created computer-based resource banks of assessment items and instructional materials and have encouraged relationships with national curriculum projects or programs.

Finally, states have instituted school improvement plans to enable schools to become important decision makers and to allocate resources in light of reform goals. All the states in our study require or have incentives for some form of school improvement planning. Florida and Maryland, for instance, require every school (or schools that do not meet state standards) to develop annual school improvement plans that describe how they will address state goals and performance standards. Other states incorporate school improvement planning into their accreditation processes (e.g., Colorado and Michigan) or link improvement planning to regulations governing site-based decision making (e.g., Kentucky and Texas).

THE IMPACT OF STATE POLICY ON LOCAL POLICIES AND PRACTICES

Challenging standards of learning combined with assessments and accountability systems that encompass the same expectations for all students are the key policy drivers of Title I. What effects are these state policies having on schools and local school districts? Are they providing the kinds of guidance and incentives that schools need to help all children reach higher standards? Preliminary findings from our first year of district-level data collection are the following:

1. Standards matter.
2. Well-developed state and local accountability systems create incentives for school and system improvement.
3. Particular kinds of district capacity facilitate local improvement efforts.

Standards Matter

The study found that in states with well-established standards, school districts have developed or modified local standards so they are aligned with state policies. In the other states, however, districts have created their own standards that incorporate national models. The district standards set clear expectations for student achievement and guide school improvement planning, curriculum development, assessments, and professional development. Most of the districts in our study require schools to develop improvement plans that identify school-level needs and strategies for achieving district goals. These plans are often used to identify teacher professional development needs, justify the expenditure of Title I and other discretionary funds, and plan curriculum and instruction. Some districts have undertaken curricular initiatives targeted to specific academic goals. One district launched a five-year plan to align its curriculum to meet state expectations in the core academic areas. Lengthy and highly specified curriculum guides provide standards, frameworks, scope, and sequences to teachers; they contain a hierarchy of outcomes that run from state to district to grade level and, finally, to unit outcomes. District assessments measure student progress against these outcomes during the school year. Another district required all of their elementary and middle schools to use a computer-based instructional program focused on reading and mathematics to improve student performance. A third district initiated a district-wide reading program to address the increased requirements of its state's language arts standards, while other districts have adopted particular mathematics curricula, such as the University of Chicago School Mathematics Program, that they view as aligned with state standards.

Accountability Systems Create Incentives for Improvement

Like states, districts are also holding schools accountable for meeting district and state standards. Some districts in our study have created an "accountability-flexibility" tradeoff; that is, they give schools wide latitude in decision making about curriculum, instruction, and resources, in exchange for holding the schools accountable for district- or school-established improvement goals.

The expectations and consequences of district accountability systems vary. District accountability systems often reflect differences in the design of their state accountability systems. In Maryland and Kentucky, for example, where the state has established challenging content standards and performance goals, districts hold their schools accountable for meeting state standards. None of the districts we visited in these states had enacted any sanctions beyond the state's sanction. One district, however, supplemented the state's reward program. In Texas, many schools already meet the less rigorous state standards. Thus, some districts are setting higher goals, such as having all their schools be in the "recognized" or "exemplary" categories (which require more students to pass the state assessment, higher attendance, and lower dropout rates) or having all students graduate from high school prepared to enter a four-year college. Two of our California study sites have developed their own accountability systems, with the goal of bringing 90 percent of their students to a proficient level. Schools that exceed district expectations in one of these districts receive rewards; those that fail to improve could be reconstituted. The other district has implemented a no-social-promotion policy at Grades 3 and 8. Several districts evaluate principals on whether their schools meet goals set in school improvement plans or if their students meet the state or district performance standards. In one of these sites, principals who achieve these goals are given a multiyear contract, while those who do not meet the goal in three years may be reassigned to another school.

These comprehensive accountability systems create incentives for school and school system improvement by focusing attention on student outcomes and progress, providing data for decision making, and creating pressure for more and better measures of student performance. Research is showing that the positive and negative consequences of accountability systems motivate school staff to work in more focused ways on state and district goals (Kelley, Milanowski, & Heneman, 1998). Teachers view monetary incentives as an important symbol to the public of a job well done. Negative outcomes include pressure and stress to improve results and the fear of being labeled as a "school in decline," with the accompanying professional embarrassment. As a principal in one of our districts noted:

> [The state assessment program] has probably been driving everything we've done. You can say you're doing it to raise students' achievement. To be honest, you're doing it because of accountability and assessment. I don't know if the whole accountability piece with rewards and sanctions is still the deal. It was at the beginning. Now it's a matter of pride. Before, we didn't want the scores to slip; now it's self-examination. Without the state assessment, I don't think that would have come into play. We may have been able to make some changes, maybe start some good things, but the degree and speed we have changed never would have happened.

State and district accountability systems provide not only the will but also the information needed to initiate reforms. One of the most striking trends across the districts in our study was the remarkably high level of attention paid to using data to inform decision making, even in states with weak and relatively low stakes accountability systems. While the use of outcome data is required by several of our states for school improvement planning, districts and schools have frequently gone beyond the letter of the law in their use of this information. In most districts, central office staff provided support in data use and interpretation. One of our Maryland districts created its own information management program that allows the district to access and use the state department of education's data files and to merge them with local data. Schools can also access and enter student information into the data system to develop school or student profiles. Several of our study districts hired outside experts or trained district and school staff—even, in one case, parents—to conduct data analysis and interpretation. For example, in one of our Colorado districts, each school identified at least one data analyst at its site. Some of these paid representatives were teachers; some were parents. They were to receive three years of data analysis training and be responsible for gathering and reporting on data for school improvement planning. Expectations about the use of data in decision making are high. The superintendent in one of our Texas districts routinely visits schools to ask how they are interpreting outcome data and how they are using it in planning. Through such visits, top leadership sends a strong signal about the value of data use.

Districts and schools are using the data for many purposes: for identifying the kinds of professional development activities that might help address gaps in performance, for planning curriculum and instructional materials, for assigning personnel, and for developing remedial programs or plans for students. In one of our Texas districts, students who performed poorly on a local mock Texas Assessment of Academic Skills were identified for additional support, and districts used the data to identify teachers for remedial professional development classes in the particular subject matter in which their students performed poorly. In one of our California districts, teachers had action research projects in their classrooms that were built around student performance data and were involved in study groups. In the other California district, teachers wanted the data to help improve their teaching.

As the conversation about school improvement becomes informed by an understanding of the data about students' learning, we see educators and district staff press for more and better data on multiple measures of student achievement. Such an approach is clearly seen in one of our California sites, an early reform district. Because of a desire to use student achievement data for program evaluation and system improvement, the district supplements the state's assessment and accountability system with multiple indicators of student progress. These measures include running records, a benchmark book program for early literacy, performance writing tasks, and performance assessments in mathematics. Each student is given a global proficiency rating based on standardized test scores and performance assessments in mathematics and literacy. Each school receives annual reports indicating the percent of students meeting state and district standards on multiple measures; the district goal is 90 percent global proficiency in each school. In at least two of the districts' three regions, regional superintendents require principals to collect data on student achievement in their school and to engage in some form of action research.

Several other districts in our study have extended student testing beyond their state's assessment system. Two of the three Kentucky districts added district testing: one administers the California Achievement Test, Fifth Edition (CAT-5) to most grades; the other administers school-selected reading and mathematics tests three times a year. Two of the Maryland districts use both district-designed end of unit tests and teacher-generated running records to measure student progress against district goals (which are aligned with state goals). Our Texas districts were less likely to administer additional local tests, possibly because the state assessment covers nearly all grades. One district, however, developed district tests to measure student performance on its more rigorous and comprehensive district standards. While a major purpose of district assessments was to measure the continuous progress of students toward district and state goals and to provide instructional feedback to teachers and schools, other reasons for district testing activity emerged. These intentions included providing information on individual students for parents, teachers, and special programs identification (e.g., special education); providing external validation of student performance, especially in the basic skills areas, through the use of national, norm-referenced assessments; evaluating programs (such as Title I, state compensatory education, gifted and talented, and vocational education); and reinforcing the form and language of performance assessments in instruction to bridge the gap between assessment and instruction.

District Capacity Facilitates Improvement Efforts

Clearly defined learning outcomes and aligned assessment and accountability systems are necessary but not sufficient to change teaching and learning in ways that foster continuous improvement in student learning. On the basis of our research, we found that certain kinds of district capacity facilitate local improvement efforts. Three components appear central: a district vision or philosophy of reform; a coherent approach to change in which the district reform vision organizes efforts toward horizontal alignment of curriculum, instruction, assessment, accountability, professional development, and resource allocation; and a district/school relationship in which accountability is strengthened through a focus on capacity building.

In reforming districts, district leadership makes improving student performance a nonnegotiable goal for schools. With regard to the education of Title I students, an asset-based approach to these students is an important component of a district vision. For instance, in one district in which 91 percent of the students are economically disadvantaged, district respondents noted that "Title I students are the general student population." The move toward schoolwide Title I programs generated more cohesion among school faculty because "Title I becomes everybody's concern." Respondents in this district noted that the state accountability system—in which all students must participate—provided motivation for the district to prove that their students could achieve at high levels.

District leadership is also focused on assistance rather than compliance. Toward this end, the district vision for reform provides a framework for improvement efforts focused on student achievement. The district also provides resources—both financial and human—to facilitate school improvement. We see clear movement toward integration in districts in which reform efforts predated state reforms; that have a history of involvement in helping to shape state reform efforts (for instance by being pilot sites); that are pro active about seeking out external supports and resources (including foundation and government funding); that participate in national, regional, and state networks; that receive technical assistance from universities and educational research centers; and that have a relationship with schools characterized by reciprocal accountability. Inherent in such local conceptions of accountability is a district responsibility for capacity building: schools are held accountable for student achievement, but the district is responsible for facilitating schools' ability to improve. In the words of one district administrator, "if you say you can't do this because you need something, then we'll give you that something."

But what is that "something" that districts provide? The districts in our study employ a mix of five strategies designed to build the capacity of classrooms and schools: the enhancement of teacher professionalism, curriculum reform aligned to state standards, the use of data to identify needs and select strategies for improvement, school empowerment, and assistance targeted on low-performing schools (Massell & Goertz, 1999). The development of standards-based curriculum and use of data to drive decisions were discussed in previous sections of this chapter. Here we briefly describe the other three strategies.

Nearly all the districts in our study regard the building of teachers' knowledge and skills as a crucial component of their change process, and every district provides some form of support for professional training. Specific approaches range from the traditional workshop to the modeling of lessons by master teachers to the development of action research projects and teaching standards. While menu-driven workshops are still prevalent in our sample, we saw a growing interest in nontraditional forms of professional training and support. One California district, for example, focused its teacher development on the creation of what it calls a "learning community." Rather than offering the usual bundle of isolated and unrelated workshops, this district offers a series of extensive courses and workshops in literacy and mathematics over a two-year period. Classes are oriented toward instruction in the content areas and to district standards and goals, rather than tied to a specific textbook or curriculum package. Teachers are also encouraged to become consumers of professional literature through study groups and to engage in action research in their schools.[6] Other districts in our study are increasing the level of site-based support as a follow-up to traditional professional development offerings. Master teachers are assigned to one or a group of schools to model lessons, mentor teachers in implementing instructional programs and approaches, and direct teachers to more information on good instructional practice. In some sites, these teachers also assist school improvement teams in interpreting and using student performance data.

A second capacity-building strategy used by some of our districts is school empowerment: the path to improvement is through enabling schools to make their own choices. Here, districts give schools almost exclusive control over budget decisions and substantial authority over personnel and professional development. The schools also select their own approach to curriculum and instruction. One study district decided not to establish district-level standards or assessments in order to give schools greater flexibility and discretion. Schools are instead held accountable for performance on state standards. In keeping with this philosophy, the superintendent reorganized the central office to highlight the importance of serving the client, referring here to the principal. The district operates with a "rule of no": since the principal is viewed as the key individual for improving academic performance, the only person in the district office who can say "no" to a principal is the superintendent. The district also downsized its central office and redistributed the savings to the schools.

A third key component of most of our districts' improvement efforts is targeting capacity-building efforts on low-performing schools and students as identified by state or local assessments and accountability systems. District efforts here took several forms. A few of our districts developed explicit strategies tying school-site autonomy to performance on state and occasionally district measures. For example, one Texas district that has been decentralizing authority over curriculum and instruction and giving schools real authority over their budgets put the brakes on schools that they defined as low performing on the Texas accountability index. As a result, the lowest performing schools must obtain central office approval for their activities. Several districts mandated or encouraged schools to adopt certain instructional strategies to address weak performance on state or local assessments. These instructional strategies included some version of Reading Recovery, writing across the curriculum, or the adoption of nationally recognized whole school reforms models. Districts also made more staff and resources available to low-performing schools. Several districts assigned master teachers or "coaches" and additional instructional staff, such as reading specialists, to these schools. Some districts also required or encouraged low-performing schools to network with other schools to foster ideas and strategies for improving performance. The Maryland State Department of Education, for example, facilitates this networking by pairing high-achieving, Blue Ribbon Title I schools with struggling schools of comparable demographics and by helping other schools make their own matches through data provided on the state Web site.

ISSUES AND CHALLENGES FOR TITLE I

Evidence from 10 states and 23 districts suggests that Title I is facilitating the alignment of federal programs with state standards-based reforms. Though localities are responding with significant variation, states and districts are generally moving in the direction of standards-based reform, consistent with the intent of Title I. By aligning Title I with general education standards-based reform policies, incentives to provide a quality education to poor, low-achieving children are now embedded in state performance and accountability systems. As such, Title I faces the same issues and challenges as states in designing and implementing their reform policies. We end this chapter with a brief discussion of six such issues.

Equity Issues

While states are bringing special needs students into general education curriculum and assessment programs, accountability systems in many states do not make the achievement of the Title I target population—poor and low-achieving students—a high priority (Chun & Goertz, 1999). Most systems are designed to measure the continuous progress of schools, not individual students. Measures that focus on the performance of the student body as a group mask performance gaps among subgroups of students. Thus, basing rewards and sanctions on the performance of the student body as a whole does not provide a direct incentive for schools to reduce achievement gaps among subgroups of students, such as differences in performance across race, ethnicity, or socioeconomic status. While Title I requires states to report student assessment results by subgroup, only one state—Texas—holds schools accountable for the performance of groups of students. If any subgroup of students (by grade, race/ethnicity, low-income) within a school does not meet the school's annual goal, the school is subject to sanctions under Texas' accountability system.

In addition to overlooking the performance of student subgroups, state and Title I policies may leave the lowest-performing students behind under current measures of adequate yearly progress and performance targets. For example, a Maryland school can meet the state's K–8 goals (70 percent of students scoring *satisfactory* on the Maryland State Performance Assessment Program) even if 30 percent of students in the school have less than satisfactory scores. In Florida, schools can satisfy AYP even if 40 percent of their students fail to meet minimum proficiency on the new state assessment. Texas's Year 2000 goal for its education reform is to have 50 percent of students pass the state assessment. Many states' criteria for progress can be satisfied by focusing attention on those close to meeting satisfactory standards and ignoring students at the bottom of the performance distribution. A few states, such as Colorado, Michigan, and Nebraska, have policies that require schools to show change across the performance spectrum: students at all levels, from low- to high-achieving, must show improvement. These kinds of state policies can provide explicit incentives to address teaching and learning needs of students furthest from meeting the standard.

Policy Instability

Changes in state content standards and state assessment and accountability systems complicate the process of reform. Frequent changes in these requirements contribute to the notion that "this (policy) too shall pass," delegitimizing the policies as a source of instructional guidance and reducing the incentive for local districts to respond with curricular and instructional changes. Some changes are a necessary consequence of the evolution of reform (e.g., the review and revision of state standards and the development of new assessments aligned to these standards). More problematic for Title I (and schools and school districts) are the politically driven changes in state policies. In the 10 states examined for this study, controversies have emerged around three broad issues: (1) the content of state standards, (2) the content and format of the state assessment, and (3) the consequences of test performance for students and schools.

Three of our study states (including two that were standards-based reform pioneers, Texas and California) recently revised their mathematics and English/language arts standards. In all three cases, the debates were acrimonious, reflecting conflict between those who support a basic-skills emphasis and traditional instructional approaches and those who support more hands-on, problem solving-oriented teaching. Decisions about testing design and administration are also political choices, subject to debate. In some states, the use of essays and other nonmultiple choice items have been criticized as subjective. Testing time and burden are also contentious issues since educators, legislators, and parents often view time spent testing students as detraction from instructional time. As a result, legislatures in three of our states limited testing time for their assessments. Responding to burden at the tested grades, Kentucky restructured its assessment so that subject-area assessments are divided across two grades per grade interval, rather than administered in one. Test burden will continue to be a topic on the political agenda as districts supplement state assessments with their own tests and parents and policymakers call for assessments that yield reliable individual scores.

State assessments attract increased public and legislative scrutiny and criticism when high stakes are attached to test results. Although most state accountability provisions focus on school accountability, 20 states nationally require students to pass state-developed exit exams to receive high-school diplomas (CCSSO, 1998). Concern over the consequences of more difficult tests for students have slowed the development of new high-school tests aligned with higher standards in Maryland. Diploma endorsements were delayed and changed in Michigan in response to parental protests.

Lack of Assessment Alignment

The political context of assessment development may slow the process of aligning new state assessments with new content standards. Calls for shorter testing time and individual results may also lead to state assessments that rely more heavily on multiple choice formats and norm-referenced items, structures that are not as well suited to measuring higher order thinking and problem-solving skills.

In states where assessments are not aligned with state or district standards, teachers get pulled in two directions. Should they teach to the test, on which they and their colleagues are held accountable, or should they teach to the standards that provide a different vision of teaching and learning? This tension was seen in two of our California sites after the state implemented the Stanford Achievement Test, Ninth Edition (SAT-9) as a transitional state assessment. Respondents were worried that results from the SAT-9 would receive attention at the expense of other district measures, such as portfolio assessments. The format of the assessment was also seen as moving in a different direction from prior state and current district reform efforts.

Local Control Limits State Authority

The power of Title I to raise expectations for disadvantaged students and improve the quality of education provided them depends on the ability of states to mandate standards-based reform policies, yet a tradition of strong local control limits state authority in many states. For example, state content standards are only model standards in 4 of our 10 study states; districts are allowed to adopt their own standards. In states such as Colorado and Michigan, state standards are incorporated in state assessments, providing an incentive for districts to align their curriculum with state objectives. But districts in these states will pay serious attention to state assessments only if consequences are attached to poor student performance on these tests. As noted earlier in this chapter, not all states hold schools and school districts accountable for the attainment of state-established performance goals. This further reduces the power of state (and state Title I) policies.

The District Role Is Ill-Defined

The new accountability approaches adopted by states and the federal government, coupled with a growing focus on site-based decision making, call into question the traditional relationship between schools and their districts. In the past, states held districts accountable for inputs (such as qualified teachers and well-maintained facilities) and for processes (such as implementing state and federal directives correctly). Now measures of success are collected and reported at the school level, and states may intervene directly in the operation of low-performing schools regardless of how the district defines its responsibilities regarding school performance (Fuhrman, 1999). Some states, like Kentucky, allow parents to transfer their children out of low-performing schools. Florida's new A+ Plan gives vouchers to students who attend failing schools. Strong site-based decision making laws and a push for school-selected whole school reform programs have the potential to further erode districts' legal authority and control.

These changes in education governance structures and accountability systems raise new questions about the role of the district in the Title I program. In an increasingly decentralized system, it is unclear who has the responsibility and the capacity to identify and help low-performing schools improve. States have limited resources to assist schools directly, yet most schools lack the resources or capacity to tackle reform on their own. States have identified few districts as being in need of improvement, and have not focused many resources on building the capacity of these entities. State, local, and federal policymakers have to decide which problems are best addressed by an individual school and its community, which problems can and should be solved through collective action, and at which level—the district or state level—the problems can be solved. Perhaps it is time to shift the debate from: "What is the appropriate balance of power between schools and districts?" to "What are the most effective district strategies for supporting school change?"

From Data to Real Reform

Although state and district assessments and accountability systems are focusing schools on student performance and state and local goals, most educators are having difficulty linking assessment results to needed improvements in curriculum and instruction. A major challenge is helping schools identify needed instructional programs and professional development and helping teachers connect test results to classroom practices. As one of our respondents noted:

> One of our biggest challenges right now in the district, I think, is to help schools look at student achievement indicators and try and connect them back to what are they doing, what aren't they doing...to really help them understand how to look at data, how to look at student work, how to interpret. We have sent schools multitudes of pages of data over the years, but we have not, I don't think, done a very good job with our district in helping them understand what to do with it when they got it.

NOTES

1. The Consortium for Policy Research in Education (CPRE) and the Center for Policy Research on the Impact of General and Special Education Reform (the Center) conducted the research reported in this chapter. The Center is a joint endeavor of the National Association of State Boards of Education (NASBE), the Institute for the Study of Exceptional Children and Youth at the University of Maryland, and CPRE. Funding for this work was provided by the U.S. Department of Education's National Institute on Educational Governance, Finance, Policymaking and Management (Grant #OERI-R308A60003), the U.S. Department of Educa-

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2. Content standards are "broad descriptions of knowledge and skills students should acquire in a particular subject area." Performance standards are "concrete examples and explicit definitions of what students should know and be able to do" in order to demonstrate that they are proficient in the skills and knowledge framed by content standards (P.L. 103-227).

3. The 10 state case study states are California, Colorado, Florida, Kentucky, Maryland, Michigan, Minnesota, Nebraska, Pennsylvania, and Texas. Together they educate about 40 percent of the U.S. public school students. These state case studies were conducted by the Consortium for Policy Research in Education (CPRE) and the Center for Policy Research on the Impact of General and Special Education Reform (the Center) in 1996–1997. CPRE researchers updated information on state Title I, assessment and accountability policies in the 10 states in fall 1999.

4. The 23 district case studies are of two districts in California and three districts each in Colorado, Florida, Kentucky, Maryland, Michigan, Minnesota, and Texas. The districts are diverse, representing a range in size, race/ethnicity, urbanicity, and socioeconomic status; however, districts were selected for their activism in school improvement and standards-based reform. These district case studies were conducted by CPRE in 1997–1998.

5. This section draws heavily on Chun and Goertz (1999).

6. This approach draws on a model of professional development designed and implemented by Anthony Alvarado in District #2 in New York City (see Elmore, 1997, for a description of the District #2 model).

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CHAPTER 6

TEACHER QUALITY AND EDUCATIONAL INEQUALITY

The Case of Title I Schools

Richard M. Ingersoll

Few educational problems have received more attention in recent times than the failure to ensure that elementary and secondary classrooms are all staffed with qualified teachers.[1] Over the past two decades, dozens of studies, commissions, and national reports have drawn attention to the importance of the qualifications and quality of the teaching force. This concern is understandable. Teachers are a particularly important educational resource, the largest single component of the cost of education in any country is teacher compensation and student educational outcomes ultimately depend on the work of teachers.

Not surprisingly, the issue of teacher quality has also been at the heart of the ongoing national debate over equality of educational opportunity. Unequal access to qualified teachers and, hence, to quality teaching is considered a primary factor in the stratification of educational resources and opportunities to learn. Commentators, researchers and policymakers have long held that the most needy students in the United States—especially those in Title I schools serving poor, minority, and urban communities—are taught by the least qualified teachers (e.g., Bennefeld 1997; Darling-Hammond, 1987; Dreeben & Gamoran, 1986; Elmore & Fuhrman 1995; Guiton & Oakes 1995; Haycock, 1998, 2000; Kozol, 1991; National Commission on Excellence in Education, 1983; Oakes, 1985, 1990; Rosenbaum, 1976; Stevens 1993; Urban League, 1999). The source of this problem, according to most researchers and commentators, lies primarily in the quantity of teachers produced by the educational system and the quality of the training teaching candidates receive. The depth and breadth of the training and preparation of prospective members of the teaching force vary widely, and Title I and disadvantaged school districts, unable to match the salaries, benefits, and resources offered by more affluent schools have difficulty competing for the most qualified teaching candidates.

These critics argue that staffing inequities are further exacerbated by perennial teacher shortages. Shortfalls in the supply of qualified teachers, resulting from increasing student enrollments and a graying teaching workforce disproportionately fall on low-income and disadvantaged schools, which are unable to find enough qualified candidates to fill their teaching job openings. In turn, unequal access to qualified teachers and, hence, to quality teaching is considered a primary factor in unequal student educational and occupational outcomes. For example, some leading social critics have directly tied problems of inner-city joblessness and underemployment to a dearth of qualified teachers in poor, urban, public schools, resulting from teacher shortages (e.g., Wilson 1996). As a result, in recent years unequal access to qualified teachers has been cast as a major social problem and has received widespread coverage in the national media. The problem has been the subject of a growing body of empirical research (e.g., Hirsch, Koppich, & Knapp, 2001; National Commission on Teaching and America's Future, 1996, 1997) from which have come a number of reform and policy initiatives.

Teacher policy and reform has primarily been directed to either upgrading the quality of teachers or to increasing the quantity of teachers. To address the former, many states have pushed for more rigorous preservice and inservice teacher education, training, and certification standards. To address the latter need, a whole host of initiatives and programs have sprung up that attempt to increase the supply of available teachers by recruiting new candidates into teaching, especially to schools serving disadvantaged students. For example, a key goal of President Clinton's educational agenda was to recruit thousands of new teachers to serve in Title I and disadvantaged schools. A wide range of alternative licensing programs has been implemented to ease entry into teaching. Programs such as Troops-to-Teachers are designed to entice professionals into mid-career changes to teaching. Other programs, such as Teach for America seek to lure the "best and brightest" into teaching. Finally, financial incentives such as signing bonuses, student loan forgiveness, housing assistance, and tuition reimbursement have all been instituted to aid teacher recruitment (Clinton, 1999; Feistritzer, 1997; Kopp, 1992).

Concern over access to quality teachers has also provided the impetus for a growing body of empirical research. Numerous studies have examined overall levels and disparities of access to qualified teachers using nationally representative data (e.g., Blank & Gruebel 1993; Blank & Langesen 1997; Choy et al. 1993; Henke, Choy, & Geis, 1996, 1997; Horn, Hafner, & Owings, 1992; Oakes, 1985, 1990; Pascal, 1987; Raudenbush, Fotiu & Cheong, 1998; Smerdon, 1999). These analyses have documented that the quality of teaching staffs do, indeed, vary across different types of schools and, in general, the quality of teachers are often lower in Title I, disadvantaged, low-income and high-minority schools.

Because it is difficult to obtain large-scale data on the actual degree of quality teaching provided to students in classrooms, most of this research turns to what is more easily measured and more readily available: teacher qualifications. Although qualifications of teachers such as their education, training, and experience, are only indirect measures of the quality of teachers, most analysts agree they provide useful information on this important educational resource (e.g., Haertel, 1990; Haney, Madus, & Kreitzer, 1987; Kennedy, 1992). Teaching, unlike many other occupations, has an extensive body of empirical research documenting that teachers' qualifications are an important component of teacher performance (e.g., Ferguson, 1991; Greenwald, Hedges, & Laine, 1996; Hedges, Laine, & Greenwald, 1994; National Commission on Teaching and America's Future, 1996, 1997).

Existing empirical research has shed much light on the distribution of qualified teachers across different kinds of schools. But it has shed little light on the causes of these differences. There has been little empirical research investigating the sources of inadequacies and disparities in access to qualified teachers, especially using nationally representative data. For example, there have been surprisingly few efforts to closely examine with national data the breadth and depth of teacher shortages, how much impact they have on teacher qualifications, and in which kinds of schools they occur most frequently (Ingersoll, 2001c). There have also been few efforts to isolate which aspects of the context, policies, organization, administration, or conditions of districts and schools are related to a school's success in providing qualified teachers for all classrooms.[2]

TEACHER QUALITY AND THE ORGANIZATION OF SCHOOLS

The objective of this study is to examine the sources of inadequacies and inequities in teacher qualifications, especially in Title I schools serving low-income, high-minority enrollment urban communities. Unlike most previous research, this study empirically explores the reasons *why* particular kinds of schools have less qualified teachers. To address these questions, this study adopts an unusual perspective—one focused upon the organization of schools.

The source of the problem of unqualified teachers is widely assumed to lie in deficits in either the quality or the quantity of teachers—a view hereafter referred to as the teacher deficit perspective. In contrast, the central hypothesis of this study is that fully understanding the problem of unqualified teachers requires not only examining the quantity and quality of the teaching force, but also examining the characteristics of the organizations within which teachers work. From this perspective, the manner in which teachers are managed, employed, and utilized can account for as much of the problem of underqualified teaching as do inadequacies in the supply or training of teachers.

At the outset it needs to be recognized that investigating the role of schools in the problems of the educational system, especially for disadvantaged communities, is a highly contentious subject. Some school critics, especially those with a conservative political orientation, have argued that incompetent and corrupt school managers are a major factor in the plight of low-income, inner-city public schools. Liberal-left critics have forcefully responded that this viewpoint unfairly places responsibility for the problems of low-performing schools on the schools and students and unfairly shifts responsibility away from systemic inequities in funding and resources embedded in the larger educational or socioeconomic system (e.g., Kozol, 1991).

From the organizational perspective of this study, it is necessary to move beyond this polarized debate in order to develop an adequate understanding of which aspects of schools—their policies, administration, or conditions—affect the extent to which schools succeed in providing qualified teachers in their classrooms. Understanding if and how school decision makers can either undermine or foster quality teaching is of vital importance because of the obvious implications for devising reforms, policies, and interventions that address all the key factors at the root of the problem of underqualified teaching (e.g., Chester, Offenberg, & Xu, 2001).

This study focuses on one of the least recognized and least understood sources of underqualified teaching in schools: the problem of out-of-field teaching—teachers assigned by school administrators to teach subjects which do not match their training or education. This is a crucial factor because highly qualified teachers may actually become highly unqualified if they are assigned to teach subjects for which they have little training or education. Until recently, it has also been an underrecognized issue largely because of an absence of accurate data—a situation remedied with the release of a major new survey of teachers and schools, the Schools and Staffing Survey (SASS) by the National Center for Education Statistics (NCES) in the early 1990s.

In previous analyses (Ingersoll, 1995, 1996a, 1999, 2000) I have used these data to profile the qualifications of the nation's elementary and secondary teachers and, in particular, the levels and distribution of out-of-field teachers. The findings of this research have captured widespread interest and been featured in a number of major education reports (e.g., National Commission on Teaching and America's Future, 1996, 1997; Education Trust 1996, 1998; Education Week, 1997, 1998, 2000). Notably, these findings have been replicated. Several NCES analysts have calculated levels of out-of-field teaching using the same, or similar, data sources and have reached the same conclusion that there are high levels of out-of-field teaching in American schools (e.g., Bandeira de Mello, & Broughman, 1996; Bobbitt and McMillen, 1995; Smerdon, 1999). As a result, over the past couple of years, the problem of out-of-field teaching has become a prominent topic in the realm of educational policy and has been widely reported and commented upon in the national media. However, despite this new awareness and attention, the problem of out-of-field teaching remains widely misunderstood. At the heart of this misunderstanding is a crucial question: What are the reasons for the prevalence of out-of-field teaching in American schools?

It is widely assumed that out-of-field teaching, like other kinds of underqualified teaching, is also a result of deficits in either the quality or quantity of teachers. This study challenges the teacher deficit perspective and adopts an organizational perspective to investigate the sources of underqualified teaching in schools. It expands on my earlier work on out-of-field teaching, by specifically focusing on the connection between out-of-field teaching and the manner in which schools and teachers are managed and administered.

Unlike traditional professions, teachers have only limited authority over key workplace decisions. For example, teachers have little say over which courses they are assigned to teach. Decisions concerning the hiring and the allocation of teachers to course and program assignments are primarily the responsibility and prerogative of school principals (Ingersoll, 2000). The latter are charged with the often difficult task of providing a broad array of programs and courses with limited resources, a limited budget, and a limited teaching staff. Along with these limitations, principals' staffing decisions can also be constrained by numerous other factors such as teacher union work rules, teacher seniority issues, school district regulations, class size guidelines, and contractual obligations concerning the number and type of class assignments normally given to teaching employees. For example, in a typical secondary school teacher employment contracts stipulate that full-time teaching staff must be assigned to teach five classes in a normal seven class-period day.

However, the data show that within these constraints school principals have an unusual degree of discretion in staffing decisions. Whereas the training of teachers is subject to an elaborate array of state licensing requirements, there is far less regulation of how teachers are utilized once on the job (Education Week, 2000; Ingersoll, 1999; Robinson, 1985; Ruby 1999;). In this context, principals may find that assigning teachers to teach out of their fields is often not only legal, but also more convenient, less expensive, and less time consuming than the alternatives. For example, rather than trying to find and hire a new science teacher to teach a newly state-mandated but underfunded science curriculum, a principal may find it more convenient to assign a couple of English and social studies teachers to cover a section or two in science. If a teacher suddenly leaves in the middle of a semester, a principal may find it faster and less expensive to hire a readily available, but not fully qualified, substitute teacher rather than conduct a formal search for a new teacher. When faced with the choice between hiring a fully qualified candidate for an English position or hiring a less qualified candidate who is also willing to coach a major varsity sport, a principal may find it more convenient to do the latter. If a full-time music teacher is under contract, but student enrollment is sufficient to fill only three music classes, the principal may find it expedient and cost effective to assign the music teacher to teach two classes in English, in addition to the 3 classes in music in order to employ the teacher for a regular complement of five classes per semester.

Faced with a myriad of such judgments and trade-offs, some degree of teacher misassignment by principals is probably unavoidable. Although the SASS data show that out-of-field teaching is widespread, the data also show there are large school-to-school differences in this practice (Ingersoll, 1999). This raises an important question that is at the center of this study: What accounts for these large school differences in levels of out-of-field teaching? The following analysis addresses this question by investigating the effect on out-of-field teaching of a number of factors drawn from both the teacher deficit perspective and the organizational perspective.

RESEARCH QUESTIONS

School Recruiting and Hiring Difficulties

Contemporary educational theory holds that teacher shortages are a major factor behind the problem of underqualified teachers in general and out-of-field teaching in particular. This study will examine whether schools that experience more difficulties in recruiting qualified teaching staff for their teaching job openings have significantly higher levels of out-of-field teaching.

Administrative Practices and Organization Characteristics

Hiring Policies

While data from SASS show that school principals have a great deal of control over decisions concerned with the hiring of teachers, the data also show that the central administrations of public school districts vary in the extent to which they impose standards on these school-level decisions or have formal regulations concerning minimal training requirements for new hires. The data show that about two thirds of all school districts formally require new teacher hires to hold a college major or minor in the main field to be taught (Ingersoll, 2000). We would expect such regulations to constrain the capacity of school principals to hire out-of-field candidates for openings. This analysis will examine whether the existence of these kinds of regulations is related to the amount of out-of-field teaching in schools.

Principal Leadership

Both the degree to which a school is faced with teacher recruitment and hiring difficulties and the kinds of regulations imposed by district-level administrators may shape a principal's teacher hiring and staffing decisions. An organizational perspective, however, suggests there is also an overlooked role for the principal's leadership and skill in the employment, assignment, and utilization of teachers. This analysis will explore this factor by examining whether there is any association between the general leadership skill of principals and the degree of out-of-field teaching in schools.

Staffing Practices

Depending upon the constraints within which principals work, the degree of discretion allowed to them, and their managerial skill, there could be numerous options, choices, and strategies available to principals in regard to teacher hiring and assignment (Ingersoll, 1999, 2000). For example, when faced with difficulty in finding qualified candidates to fill teaching openings, school principals might opt to hire an available but underqualified teacher at the cost of a regular teacher salary, opt to reassign an existing teacher to cover part or all of the hard-to-staff classes at no additional salary, or opt to employ a long-term substitute teacher at a relatively low salary. We would expect each of these choices to result in significantly more out-of-field teaching.

Alternatively, rather than resort to out-of-field assignments, principals might opt to leave some hard-to-staff teaching openings unfilled and shift student enrollment to existing teachers' classes. This would lead to an increase in overall class sizes, but with a savings of salary costs. In other cases, especially in more affluent and advantaged communities, school officials might have the ability to enhance teacher recruitment efforts by providing higher starting salaries. We might expect any of these factors to result in less out-of-field teaching. This analysis will examine the relationship between these kinds of different managerial choices and the degree of out-of-field teaching that exists in schools.

Teacher Unions

Teacher unions and their work rules are another source of constraint on the staffing decisions of school principals. It is unclear, however, what effect such constraints have on the degree of out-of-field teaching. On the one hand, some opponents of teacher unions have blamed teacher unions for the prevalence of out-of-field teaching. In this view, self-serving work rules promulgated by teacher unions, especially seniority rules, are the main reason that classrooms are staffed with underqualified teachers. The use and abuse of such rules is especially prevalent in times of teacher oversupply, when school officials face the need to cut or shift staff because of fiscal cutbacks or declining enrollments. In such situations, "last-hired, first-fired" union seniority rules require that more experienced teachers must be given priority, regardless of competence. As a result, veteran teachers are often given out-of-field assignments, in-field junior staff are transferred or laid off, and students suffer accordingly (e.g., Toch, 1996). This viewpoint predicts that schools with teacher unions will have significantly more out-of-field teaching.

On the other hand, members and leaders of teacher unions have often opposed the practice of out-of-field teaching. Albert Shanker (1985, October 27), the former head of the American Federation of Teachers, condemned out-of-field teaching as education's "dirty little secret" and called for its elimination. From this viewpoint, the presence of a teacher union in a school district would have an attenuating effect on the practice of out-of-field teaching. This analysis will test these competing predictions by examining under what conditions the presence of teacher unions is related to the degree of out-of-field teaching in schools.

School Size

School size has been the subject of much attention in recent years and a "small is beautiful" notion is currently popular among many education researchers and policy makers (e.g., Bryk, Lee, & Smith, 1990). In earlier analyses of the data (Ingersoll, 1999) I found a strong inverse correlation between the size of schools and the amount of out-of-field teaching in schools; smaller schools have more out-of-field teaching than do larger schools. This finding suggests that one possible disadvantage of smaller schools often overlooked in the debates over the relative merits of small and large schools is a greater degree of underqualified teaching. Small schools may find it more difficult to allow staff specialization and, as a result, teachers in these schools may often be required to be generalists. This study will test whether the association between size and out-of-field teaching holds up across a range of schools and after controlling for other factors.

In sum, the objective of this study is to investigate the sources of underqualified teaching in schools and why particular schools, especially Title I and those in disadvantaged communities, are more likely to have out-of-field teaching. The analysis first focuses on establishing the role out-of-field teaching as a major source of underqualified teachers, especially in disadvantaged schools. Data are presented showing the distribution of teachers' qualifications and the distribution of out-of-field teaching across different types of schools (e.g., according to student race/ethnicity, poverty and urbanicity). The study then explores the sources of school-to-school variations in out-of-field teaching. It investigates which of the contextual, organizational, and administrative aspects of schools are associated with staffing underqualified teachers.

DATA AND METHODS

Data

The data for this study come from NCES' Schools and Staffing Survey (SASS). This is the largest and most comprehensive data set available on the staffing, occupational and organizational characteristics of elementary and secondary schools. The survey was specifically designed to remedy the lack of nationally representative and comprehensive data on these issues (Haggstrom, Darling-Hammond, & Grissmer, 1988; Ingersoll 1996b).

The U.S. Census Bureau collected the SASS data for NCES from random samples stratified by state, sector, and school level. To date, three independent cycles of SASS have been completed: 1987–1988, 1990–1991, and 1993–1994 (for information on SASS, see Choy et al., 1993 or Henke et al., 1997). Each cycle of SASS includes several sets of separate, but linked, questionnaires for school administrators and for a random sample of teachers within each school. The response rate was relatively high: 86 percent for schoolteachers and 94 percent for school administrators. The data used in this study are primarily from the 1993–1994 SASS. The sample contains about 46,700 teachers employed in about 9,000 public elementary, secondary, and combined (K–12) schools. Throughout, this analysis uses data weighted to compensate for the over- and under-sampling of the complex stratified survey design. Each observation is weighted by the inverse of its probability of selection in order to obtain unbiased estimates of population parameters.

SASS is particularly useful for addressing research questions on access to qualified teachers. It has gathered a wide range of information on the characteristics of teachers and the characteristics of schools and school districts across the country. Data were collected, for example, on the subject taught, grade level, and number of students enrolled for each class period in the school day for each teacher sampled. In addition, teachers reported their certification status and the major and minor fields of study for each of their degrees earned at both the undergraduate and graduate levels. From administrators, SASS has obtained a wide range of information on the school demographic characteristics, staffing procedures and difficulties, and administrative practices and organizational characteristics.

Methods

There are two stages to the data analysis and data presentation: the first is concerned with documenting levels of teacher qualifications and out-of-field teaching across different types of schools, while the second is concerned with exploring the sources of school-to-school variations in out-of-field teaching.

One of the difficulties encountered in researching the problem of underqualified teachers has been a lack of consensus on the best standard by which to define a qualified teacher. Few would argue that teachers ought not to be qualified; moreover, there exists substantial empirical support for the reasonable proposition that the qualifications of teachers are tied to student achievement (e.g., Greenwald et al., 1996; Raudenbush, Fotiu, & Cheong, 1999). But there is a great deal of controversy concerning how much education, what types of training, and which kinds of preparation teachers ought to have to be considered qualified in any given field (e.g., Haertel, 1991; Haney et al., 1987; Kennedy, 1992).

Like much previous empirical research on the issue, this study focuses on a variety of indicators of teacher qualifications such as teachers' college degrees and teaching certificates. And similar to previous empirical research on the issue, an important premise underlying this analysis is that adequately qualified teachers ought to have, as a minimal prerequisite, a credential (such as a degree or certificate) in the fields they are assigned to teach. Having a credential, signifying some degree of training or education in a field, does not guarantee one is a quality teacher, nor even that one is a qualified teacher, but the assumption underlying this research is that some degree of training is a necessary, if not sufficient, requirement of both.[3]

The first stage of the analysis presents descriptive statistics on levels of teacher education, teacher certification, and teaching experience and the extent to which these levels vary according to school poverty enrollment level, school minority enrollment level, and school urbanicity. This stage of the analysis also presents data on the extent to which teachers are assigned to teach in fields that do not match their fields of training.

Previous studies have used a number of different measures of out-of-field teaching, representing a range of standards.[4] Some measures focus on whether teachers have a teaching certificate in the fields they teach, others focus on whether teachers have an undergraduate or graduate degree, and still others focus on whether teachers have both a certificate and a degree in the fields they are assigned to teach. Measures of out-of-field teaching also vary according to whether they choose to focus on the numbers of teachers doing it or the numbers of students exposed to it, according to which fields and subjects are examined and also according to which grade levels are investigated. This project will use several different measures of out-of-field teaching, drawn from this previous work. The first stage of the analysis focuses on those without an undergraduate or graduate major or minor in the field taught, for five specific fields (general elementary education, and secondary level mathematics, English, social studies, and science).[5]

The second stage of the analysis is concerned with explaining why particular schools are more or less likely to have different levels of out-of-field teaching. Its objective is to investigate which aspects of the context, organization, and administration of schools are associated with out-of-field teaching. It begins by summarizing descriptive statistics on recent trends in overall levels of teacher supply, demand, and shortages; the numbers of schools that actually experience difficulty recruiting qualified faculty to fill their teaching openings; and the extent to which these difficulties affect the levels of out-of-field teaching. This stage of the analysis then turns to a more advanced statistical analysis of the relative impact of various factors on out-of-field teaching, focusing on the secondary level. The subsample includes 23,867 teachers in Grades 7–12. It includes all those teaching in any of eight fields, parallel to conventional departmental divisions at the secondary level: English, mathematics, social studies, science, art/music, physical education, foreign language, and vocational education. It excludes those employed in middle schools.[6]

The outcome or dependent variable in this analysis is a second measure of out-of-field teaching—for each secondary-level teacher, the percentage of their daily classes in which they do not have an undergraduate or graduate major or a minor in the field taught. The analysis examines the association with this measure of out-of-field teaching of four groups of independent variables: teacher qualifications, school demographic characteristics, school recruiting and hiring difficulties, and school administrative practices and organization characteristics. Figure 1 provides definitions and Table 1 provides summary statistics for these variables.

For measures of teacher qualifications, the regression analysis includes controls for each teacher's highest degree earned and total years of teaching experience. For school demographic characteristics, the analysis includes measures of school poverty enrollment, school minority enrollment, and school urbanicity. For school recruiting and hiring difficulties, the analysis includes a measure to control for whether schools had teaching job openings in the year of the survey and a measure of the extent of difficulty these schools experienced with recruiting qualified faculty to fill their openings for 13 teaching fields. Finally, after controlling for the above teacher and school factors, the analysis includes a number of independent variables reflecting school administrative practices and organizational characteristics. These latter measures include a variable assessing whether the school district has informal or formal rules stipulating that new teacher hires have a major or minor in the main field to be taught. There is a variable representing teachers' ratings of the leadership skills of

Out-of-Field Teaching

- **Percentage of secondary classes out of field**: for each 7-12th grade teacher, percentage of classes in which the teacher does not have an undergraduate or graduate major or minor in field taught. It includes all those teaching in any of eight fields, parallel to conventional departmental divisions at the secondary level: English, mathematics, social studies, science, art/music, physical education, foreign language, vocational education. It excludes those employed in middle schools. (For more detail on this measure, see Ingersoll, 1995)

Teacher Qualifications

- **Highest degree**: a 4 category variable, where 0 = less than Bachelor's degree, 1 = Bachelor's degree, 2 = master's degree, 3 = above master's degree.
- **Teaching experience**: total years of teaching experience

School Demographic Characteristics

- **Poverty enrollment:** percentage of students receiving the federal free or reduced-price lunch program for students from families below the poverty level.
- **Minority enrollment:** percentage of students who were black, Hispanic, American Indian, Asian, and Pacific Islander
- **Rural**: a dichotomous variable where 0 = central city or urban fringe/large town and 1 = rural/small town
- **Suburban**: a dichotomous variable where 0 = rural/small town or central city and 1 = urban fringe/large town

School Recruiting and Hiring Difficulties

- **Teaching job openings**: a dichotomous variable where 0 = school had no teaching job opening(s) that year and 1 = school had teaching job opening(s) that year
- **Hiring difficulties**: On a scale of 0 to 13, sum of 13 teaching fields for which the school administrator reported either "somewhat difficult," "very difficult," or "could not fill" in response to the item which asked: "How difficult or easy was it to fill the vacancies for this school year in each of the following fields?" The latter include special education, ESL/ESOL/bilingual education, English, mathematics, social studies, physical science, life science, music, foreign languages, business or marketing, industrial arts, home economics, trade and industry, agriculture.

Administrative Practices/Organization Characteristics

- **Major/minor required of hires**: on a scale of 1 = not used, 2 = used, 3 = required, school district requirement for new hires having college major or minor in field to be taught, as reported by school administrators.
- **Principal leadership**: on a scale of 1 = strongly disagree to 4 = strongly agree the school mean of 6 items asked of teachers about: whether their principal recognizes staff members for good work, communicates his/her expectations; is supportive and encouraging, backs up teachers, and communicates with teachers about instructional practices. Factor analysis (with varimax rotation method) was used to develop this measure. Item loadings of .4 were considered necessary for inclusion. Items in the factor had high internal consistency (a > .7).
- **Hiring or assigning underqualified**: on a scale of 0 to 4, sum used of 4 possible methods to cover vacancies, as reported by school administrators: hire a less than fully qualified teacher; assign teacher of another subject or grade level to teach the class; assign administrator or counselor to teach the class; use short-term or long-term substitutes.
- **Average class size**: school's mean student enrollment per classroom.
- **Starting teacher salary**: normal yearly base salary for teacher with a Bachelor's degree and no experience, as reported by school administrators. Divided by 1000, to make units refer to increments of $1000.
- **Presence of teacher union**: a dichotomous variable where 0 = school district has no teacher union and 1 = school district does have one
- **School size**: student enrollment of school. Divided by 100 to make units refer to increments of 100 students.

FIGURE 1

Definitions of Measures used in the Multiple Regression Analysis of Out-of-Field Teaching at the Secondary Level (7-12)

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TABLE 1
Means and Standard Deviations for Variables used in Multiple Regression Analysis of Out-of-Field Teaching at the Secondary Level (7-12)

	Mean	*Standard deviation*
Percent 7-12th classes taught by out-of-field teachers	16	35
Teacher qualifications		
Highest degree (scale of 0-3)	1.6	.62
Teaching experience (yrs.)	16	9.4
School demographic characteristics		
Percent students in school receiving free-reduced lunch	23	22.8
Percent minority students in school	28	28.5
Percent rural schools	43	—
Percent suburban schools	32	—
School recruiting and hiring difficulties		
Percent schools with teaching job openings	87	—
Hiring difficulties (scale of 0-13)	1.5	1.9
Administrative practices/organization characteristics		
Major/minor required of hires (scale of 1-3)	2.6	.60
Principal leadership (scale of 1-4)	2.1	.68
Hiring/assigning underqualified (scale of 0-4)	.31	.61
Class size	23	8
Starting teacher salary ($)	23,177	3,358
Percent schools with teacher union	73	—
School size	1084	640

their principals. This measure is based on teachers' subjective perceptions and, hence, is vulnerable to bias. There is also a variable on the extent to which a school covers hard-to-fill teaching openings by hiring underqualified teachers, reassigning teachers of another subject or grade level, or using short-term or long-term substitutes. Finally, there are variables for both school size and the school's average class size; the normal yearly starting salary provided by the school for new, inexperienced teachers; and whether there is a teacher union in the school district.

The objective of this portion of the analysis is to examine whether the proportion of secondary-level classes in schools that are taught by out-of-field teachers is related to the above measures of school administrative practices and organization characteristics, while controlling for school recruiting and hiring difficulties, school demographic characteristics, and the qualifications of the teachers sampled in the school. The analysis proceeds by exploring whether levels of out-of-field teaching are statistically associated with the four sets of variables by using multiple regression. This method estimates a mathematical equation—a model—indicating the relative association of each of these variables with the measure of out-of-field teaching. That is, the statistical association of each variable with out-of-field teaching is individually determined, while the other variables are held constant, or, in other words, controlled.

The data in the analysis are couched at two levels—teacher and school. Over the past two decades there has been a growing debate concerning the most appropriate multiple regression method for modeling multilevel data. Accurately predicting an outcome, such as out-of-field classes, for members of an organization, such as teachers, while taking into account the characteristics of both the teachers and the organization is a complex statistical task. Conventional multiple regression techniques, such as ordinary least squares (OLS), operate at one level of analysis and, hence, cannot properly model an outcome that is a product of factors at more than one level. Recently, researchers have developed a number of statistical techniques specifically for modeling multilevel data.

Such techniques have the advantage of allowing the analysis to simultaneously model the relationships between both individual teachers' characteristics and their own amount of out-of-field classes and between those of the characteristics of schools and the average amount of out-of-field classes of the teachers in those schools. That is, multilevel techniques do not assume that schools are entirely uniform entities, nor do they assume that they are entirely nonuniform entities. This allows the analysis to account for variation in out-of-field teaching, both between teachers within schools and between teaching staffs across schools. This analysis uses one particular multilevel program, SAS' PROC MIXED, which unlike some other multilevel software has the additional advantage of allowing for the inclusion of the survey's design weights.

RESULTS

Levels of Teacher Qualifications and Out-of-Field Teaching

The data show that most public elementary and secondary teachers have basic education and training (see Table 2). Almost all public school teachers have completed a 4-year college education. Ninety-nine percent of public school teachers hold a bachelor's degree, and almost half have obtained graduate degrees. Moreover, 94 percent of teachers have regular or full state-approved teaching certificates. The data also reveal some distinct cross-school differences in the qualifications of teachers. Students in schools with a high poverty enrollment, in schools with a high minority

TABLE 2
Percentage of Public School Teachers, by Highest Degree Earned and by Highest Type of Certification, by Type of School (K-12)

	Less than bachelor's degree	*Bachelor's degree*	*Master's degree or more*	*No certification*	*Less-than-regular certification*	*Regular certification*
Total	.7	52	47	2	4	94
Poverty enrollment						
Low	.9	45	54	1.5	3	96
High	.6	56	43	4	6	90
Minority enrollment						
Low	.6	51	48	1	3	96
High	.9	52	47	4	7	89
Community						
Rural/small town	.8	58	41	2	3	95
Urban fringe	.7	46	53	2	3	96
Central city	.7	49	50	3	5	92
Not-poor/white/suburban	.3	41	58	2	2	96
Poor/minority/urban	.2	51	49	7	9	85

Notes: Less-than-Regular Certification - includes all those with emergency, temporary, alternative or provisional certification.

Regular Certification - includes all those with probationary, regular, standard, full or advanced certification. (Probationary - refers to initial license issued after satisfying all requirements except completion of probationary period)

Low poverty refers to schools where 15 % or less of the students receive publicly funded free or reduced price lunches. High poverty refers to schools where over 80 % do so.

Low minority refers to schools where 15 % or less of the students are minority. High minority refers to schools where over 80 % are. Middle categories of poverty and minority enrollment are not shown.

Not-poor/white/suburban refers to schools that are low poverty, low minority, and suburban

Poor/minority/urban refers to schools that are high poverty, high minority, and urban.

enrollment, and in urban schools sometimes have less access to qualified teachers. For example, teachers in high-poverty schools are less likely to have graduate degrees than teachers in low-poverty schools. On the other hand, there is little difference between suburban and urban schools and between high-minority and low-minority schools in the percentage of teachers with graduate degrees.

Disparities in teachers' qualifications are more clear and distinct when these demographic characteristics are combined. For example, teachers in nonpoor/white/suburban schools (hereafter referred to as advantaged schools) are more likely to have graduate degrees and more likely to have full certificates than those in poor/minority/urban schools (hereafter referred to as disadvantaged schools). It is important to note that these data tell us little of the quality of these credentials; there may be inequities in teacher qualifications not revealed here.

The experience levels of teachers in advantaged and disadvantaged schools also differ, as shown in Table 3. Just over one tenth of all public school teachers are beginners (3 years or less) and just under one third are senior (more than 20 years). In disadvantaged schools, twice as many teachers are beginners, and fewer teachers are senior than in advantaged schools. From the perspective of many critics of educational equality, this is an important finding; experience in a teaching staff is considered a vital

TABLE 3
Percentage of Public School Teachers, by Total Teaching Experience, by Type of School (K-12)

	1 year or less	*3 years or less*	*More than 20 years*
Total	4.5	12.2	31.4
Poverty enrollment			
Low	3.6	10	35.3
High	5.6	17.5	26.3
Minority enrollment			
Low	3.9	10.7	33
High	5.2	15.8	30
Community			
Rural/small town	5	12.7	28.7
Urban fringe	3.9	11.4	35
Central city	4.4	12.4	31.3
Not-poor/white/suburban	3	9.4	38
Poor/minority/urban	5.8	18.6	27

Notes: Low poverty refers to schools where 15 % or less of the students receive publicly funded free or reduced price lunches. High poverty refers to schools where over 80 % do so.

Low minority refers to schools where 15 % or less of the students are minority. High minority refers to schools where over 80 % are minorities. Middle categories of poverty and minority enrollment are not shown.

Not-poor/white/suburban refers to schools that are low poverty, low minority, and suburban

Poor/minority/urban refers to schools that are high poverty, high minority, and urban.

asset. However, it is necessary to recognize that not all such critics share this view. Some place more value on youth than experience in teachers, and some view a disproportionately junior staff as an asset and a disproportionately senior staff as a liability. For example, Kozol (1991, p.51) argues that disadvantaged schools suffer from too many senior teachers and too few "exciting, youthful teachers." These data cannot resolve the debate over the relative merits of youth and experience in teachers. They do show, however, that on average Kozol is incorrect; disadvantaged schools have more junior level staff than do advantaged schools. Moreover, not only are there more beginners in disadvantaged schools, but beginners in those schools are less likely to be fully qualified. Table 4 is identical to Table 2 except that it focuses on beginning teachers only. It shows that although almost all beginning teachers have bachelor degrees and 83 percent have full certificates, only 59 percent of beginning teachers in disadvantaged schools have regular teaching certificates.

However, the most glaring and prominent source of inadequate access to qualified teachers is not a lack of basic education or training of teachers, but rather a lack of fit between teachers' preparation and teachers' class assignments: the phenomenon of out-of-field teaching. Whereas most teachers, even in disadvantaged schools, have a bachelor's degree and a regular teaching certificate, many teachers at both the elementary and the secondary levels are assigned to teach classes in fields that do not match their educational background.

At the elementary school level, the data show that 12 percent of those whose assignment is pre-elementary or general elementary do not have an undergraduate or graduate major or minor in the fields of pre-elementary education, early childhood education, or elementary education (see column 1 of Table 5).[7] Interestingly, the data also show that beginning elementary teachers are more prone than experienced teachers to be teaching out of their fields (see bottom row of Table 5). There are also cross-school disparities: elementary teachers in poor schools and schools serving predominantly minority student populations are less likely to have a major or minor in the field.

Levels of out-of-field teaching among elementary school teachers vary, however, according to how one defines a qualified elementary teacher. These levels drop significantly when looking at those without certificates; in background analyses (not shown here), 95 percent of regular elementary teachers had regular certificates in the fields of pre-elementary education or elementary education.

The data also show that levels of out-of-field teaching are higher at the secondary level than at the elementary level.[7] For example, about a third of all public secondary school math teachers have neither a major nor a minor in math, math education, or related disciplines like engineering or physics. About one quarter of all secondary school English teachers have neither a major nor a minor in English or related subjects such as literature, commu-

TABLE 4
Percentage of *Beginning* Public School Teachers and by Highest Degree Earned, by Highest Type of Certification, by Type of School (K-12)

	Less than bachelor's degree	*Bachelor's degree*	*Master's degree or more*	*No certification*	*Less-than-regular certification*	*Regular certification*
Total	1	82	17	6	13	81
Poverty enrollment						
Low	2	78	21	3	13	84
High	.4	83	17	13	17	70
Minority enrollment						
Low	1	84	14	2	13	84
High	.6	78	21	14	21	65
Community						
Rural/small town	1	87	12	4	12	84
Urban fringe	2	79	19	4	11	85
Central city	.9	78	21	12	17	71
Not-poor/white/suburban	.6	78	22	3	13	84
Poor/minority/urban	.2	76	24	19	22	59

Notes: Beginning Teachers—refers to teachers with 3 years or less total teaching experience.

Less-than-Regular Certification—includes all those with emergency, temporary, alternative, or provisional certification.

Regular Certification - includes all those with probationary, regular, standard, full, or advanced certification. (Probationary - refers to initial license issued after satisfying all requirements except completion of probationary period)

Low poverty refers to schools where 15 % or less of the students receive publicly funded free or reduced price lunches. High poverty refers to schools where over 80 % do so.

Low minority refers to schools where 15 % or less of the students are minority. High minority refers to schools where over 80 % are minorities. Middle categories of poverty and minority enrollment are not shown.

Not-poor/white/suburban refers to schools that are low poverty, low minority, and suburban

Poor/minority/urban refers to schools that are high poverty, high minority, and urban.

nications, speech, journalism, English education, or reading education. In science, slightly lower levels—about one fifth of all public secondary school teachers—do not have at least a minor in one of the sciences or in science education. Finally, about a fifth of social studies teachers are without at least a minor in any of the social sciences, in public affairs, in social studies education, or in history (see columns 2–8 of Table 5).[8]

As in elementary schools, there are large cross-school differences in out-of-field teaching in secondary schools. In most fields, teachers in high-poverty schools are more likely to be out-of-field than are teachers in more affluent schools. For example, almost a third of social studies teachers in high-poverty schools, as opposed to 16 percent in low-poverty schools, do not have at least a minor in social studies or a related discipline. Levels of out-of-field teaching are lower in low-poverty and low-minority schools, although these schools are not free of out-of-field teaching. Many teachers in suburban and advantaged schools also teach out of their fields. But misassignment is clearly a major factor behind lack of access to qualified teachers in disadvantaged schools. The poverty and race gaps for out-of-field teaching (in Table 5) are distinctly wider than the poverty and race gaps for teacher qualifications (in Table 2). In other words, *although teachers in disadvantaged schools are slightly more likely to have fewer qualifications, they are far more likely to be misassigned.* These cross-school findings are consistent across all three cycles of the SASS data and with analyses that use other measures of out-of-field teaching such as the percentage of classes or the percentage of students taught by out-of-field teachers (e.g., Haycock, 1998, 2000; Ingersoll, 1996).

At the secondary level, levels of out-of-field teaching are similar for teachers without a major or minor, or teachers without certification in their assigned fields. For example, about a third of public secondary math teachers do not have teaching certificates in math—a figure similar to those lacking a major or minor in math (Ingersoll, 1999). But focusing on those without certificates can lead one to underestimate the amount of underqualified teaching within broad multidisciplinarian fields, such as science and social studies. Teachers in these fields are routinely required to teach any of a wide array of disciplines and subfields within the department. However, simply having a certificate in the larger field may not mean that teachers are qualified to teach all of the subjects within the field. For example, a teacher with a degree in biology and a certificate in science may not be qualified to teach physics. Indeed, as shown in columns 5, 6, and 8 in Table 5, within science and social studies there are high levels of within-department, but out-of-subfield, teaching. Over half of those teaching physical science classes (chemistry, physics, earth, or space science) are without a major or minor in any of the physical sciences. Likewise, over half of all those teaching history are without a major or minor in history.

Several points must be stressed concerning these data on out-of-field teaching. First, there is no doubt that some of these out-of-field teachers

TABLE 5
Percentage of Public School Teachers in Each Field Without a Major or a Minor in That Field, by School Type and Teacher Experience

	Elementary	*English*	*Math*	*Science*	*Life Science*	*Physical Science*	*Social Studies*	*History*
Total	12.2	24.1	31.4	19.9	32.9	56.9	19.3	53.1
Poverty enrollment								
Low	11.6	21.8	27.5	17.2	28.9	50.6	16.2	47.1
High	20.8	20.1	37.6	28.0	39.4	68.4	29.6	63.6
Minority enrollment								
Low	8.1	21.7	27.3	17.0	32.1	55.3	18.8	55.4
High	19.5	28.5	37.8	24.6	33.6	54.2	25.5	56.8
Community								
Rural/small town	8.3	23.1	30.2	19.5	34.1	60.2	19.5	56.8
Urban fringe	14.5	21.8	29.6	21.5	32.1	55.1	16.9	50.6
Central city	14.7	25.3	33.1	16.7	31.8	50.5	21.1	48.0
Not-poor/white/suburb	13.8	*	*	*	*	*	*	*
Poor/minority/urban	21.3	*	*	*	*	*	*	*

Teacher's experience								
Less than 5 yrs.	15.2	26.1	31.7	19.7	36.1	56.8	21.3	54.8
More than 25 yrs.	11.5	17.8	25.6	13.3	24.5	52.7	14.8	48.7

Notes: Column 1 - Elementary includes all those teaching in the fields of prekindergarten, kindergarten, or general elementary in Grades K-8. It includes those teaching in self-contained classes, where the teacher teaches multiple subjects to the same class of students all of most of the day. It includes K-8 teachers employed in middle schools. It excludes departmentalized teachers who teach subject-matter courses to several classes of different students all of most of the day. Elementary teachers with a major or minor in the fields of pre-elementary, early childhood education, or elementary education are defined as in-field.

Columns 2-7 - The teaching fields of English, math, science, and social studies only include departmentalized teachers in grades 7-12. It excludes those employed in middle schools. For details on definitions of these assignment fields and the major/minors defined as in-field in each, see Ingersoll, 1999.

Columns 5, 6, and 8 - The estimates for life science, physical science, and history represent the percentage of teachers without at least a minor in those particular subfields. For example, in science, teachers (column 4) who hold a minor in any one of the sciences are defined as in-field. On the other hand, in physical science, teachers (column 6) - which includes physics, chemistry, space science and geology - must hold a minor in one of those physical sciences to be defined as in-field, rather than simply a minor in any science.

Low poverty refers to schools where 15 % or less of the students receive publicly funded free or reduced price lunches. High poverty refers to schools where over 80 % do so.

Low minority refers to schools where 15 % or less of the students are minority. High minority refers to schools where over 80 % are minorities. Middle categories of poverty and minority enrollment are not shown.

Not-poor/white/suburban refers to schools that are low poverty, low minority, and suburban

Poor/minority/urban refers to schools that are high poverty, high minority, and urban.

* Too few cases for reliable estimate

may actually be qualified even though they do not have a minor or major in the field. Some may be qualified by virtue of knowledge gained through previous jobs, through life experiences, or through informal training. Others may have completed substantial college coursework in a field and even have a certificate but lack a major or minor in that field.

On the other hand, these measures represent a relatively low standard by which to define a qualified teacher. To many observers, even a moderate number of teachers lacking the minimal prerequisite of a college minor signals the existence of serious problems in schools. Indeed, if the definition of a qualified teacher is upgraded to include only those who hold *both* a college major and a teaching certificate in the field, the amount of out-of-field teaching substantially increases. Moreover, the actual numbers of students affected are not trivial: every year in each of the fields of English, math, and history well over 4 million secondary-level students are taught by teachers with neither a major nor a minor in the field.

It is also important to recognize the implications of these data for explaining the sources of out-of-field teaching. Contrary to the teacher deficit perspective held by many researchers, policymakers, and media commentators, out-of-field teaching is not due to a lack of education or training on the part of teachers. The data show that, while beginning teachers are more prone than experienced teachers to be misassigned, those teaching out of field at either the elementary or secondary level are typically veterans with an average of 14 years of teaching experience, and about 45 percent of out-of-field teachers hold graduate degrees. Hence, out-of-field teachers are typically experienced and qualified individuals who have been assigned to teach in fields that do not match their training or education. At the secondary level, these misassignments typically involve one or two classes out of a normal daily schedule of five classes.

If not due to inadequacies in the training of teachers, what is the reason for out-of-field teaching? This is a widespread phenomenon; the data show that each year some out-of-field teaching takes place in well over half of all secondary schools in the United States and each year over one fifth of the public secondary teaching force does some out-of-field teaching. But the data also show that there are large school-to-school differences in the extent to which teachers are assigned to teach in or out of their fields of training. Hence, a key research question is: What accounts for the degree to which school administrators misassign teachers?

The Sources of Out-of-Field Teaching

Teacher Shortages

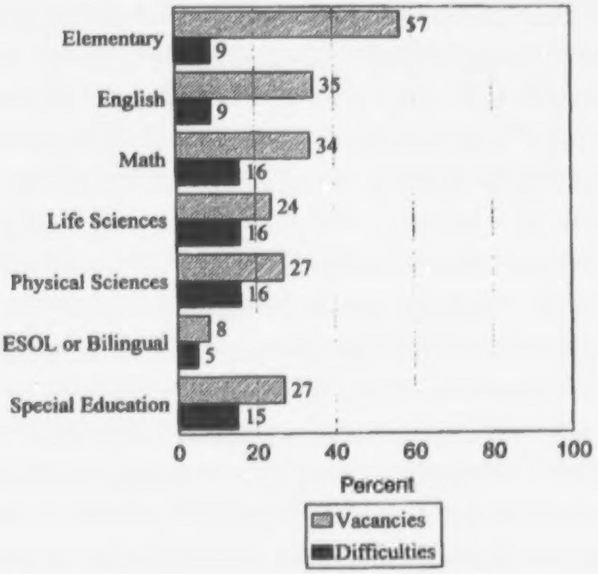
Data from SASS and other NCES data sources show that, consistent with the shortage predictions, demand for teachers has increased since the mid

1980s (e.g., see Ingersoll, 1999, 2001b). Since 1984, student enrollments have increased, most schools have had job openings for teachers, and the size of the teacher workforce (K–12) has increased, although the rate of these increases began to decline slightly in the late 1990s (Gerald & Hussar, 1998; Snyder, Hoffman, & Geddes, 1997, pp. 12–13). Most important, substantial numbers of schools with teaching openings have experienced difficulties with recruitment. For example, in both 1990–1991 and 1993–1994 about 47 percent of those with openings reported some degree of difficulty finding qualified candidates in one or more fields.

The data also show there are several problems with the shortage explanation for out-of-field teaching. First, shortages cannot explain the high levels of out-of-field teaching that the data indicate exist in fields such as English and social studies, which have long been known to have surpluses. Second, even when the rates of student enrollment increases were at their peak, in any given field only a minority of the total population of schools actually experienced recruitment problems. For instance, the data show that in 1993–1994, 35 percent of secondary schools had job openings for English teachers, and about one quarter of these indicated they had at least some difficulty filling the openings, but this represented only 9 percent of all secondary schools. Similarly, 34 percent of secondary schools had job openings for math teachers, and just under half of these indicated they had at least some difficulty filling these math openings, but this represented only 16 percent of all secondary schools (Figure 2).

Comparing the data in Table 5 and Figure 2 clearly shows that these recruiting and hiring difficulties do not account for all, or even most, out-of-field teaching. For example, while only 9 percent of secondary schools had any difficulty filling their openings for English teachers in 1993 (Figure 2), almost a quarter of all public secondary-school English teachers did not have a major or minor in English or related subjects in that same year (Table 5). Likewise, while only 16 percent of secondary schools reported problems filling their openings for math teachers, about a third of all math teachers did not have a major or minor in math. Additional analysis indicates that levels of out-of-field teaching were higher in schools reporting more difficulties in finding qualified candidates for their job openings. But the data also indicate that about half of all misassigned teachers in any given year were employed in schools that reported no difficulties whatsoever finding qualified candidates for their job openings that year.

In sum, the data show that some schools face difficulties finding qualified teachers to fill all their positions, and this problem does result in out-of-field teaching assignments. But the data suggest that shortages and their attendant hiring difficulties are not the sole, nor even the primary, factor behind out-of-field teaching. Rather than simply focusing on macro, demographic sources of this problem, this analysis hypothesizes that the source of out-of-field teaching also lies in the way schools are organized and managed.



Notes: Data on the four academic fields refer to schools serving secondary students, data for ESOL and special education refer to all schools and data on elementary positions refer to elementary schools. "Difficulty filling teaching vacancies" includes all those schools reporting either: "somewhat difficult;" "very difficult;" or "could not fill" in reference to filling vacancies for the current school year.

FIGURE 2

Percentage Schools with Teaching Vacancies and Percentage Schools with Difficulties Filling Teaching Vacancies, by Field

Predictors of Out-of-Field Teaching

This section presents the results of multiple regression analyses estimating the relationship between the dependent variable—the percentage of out-of-field classes—and four groups of independent variables: teacher qualifications, school demographic characteristics, school recruiting and hiring difficulties, and school administrative practices/organizational characteristics.

Table 6 displays the results of these analyses. Because school poverty enrollment and school minority enrollment are highly intercorrelated, I tested their effects separately; Model 1 includes a variable for school poverty enrollment, and Model 2 includes a variable for school minority enrollment. Moreover, this part of the analysis focuses solely on the secondary level: Grades 7–12. The data in the previous stage of the analysis (Table 5) indicated that levels of out-of-field teaching are more pronounced in secondary schools than in elementary schools. Moreover, to many observers the problem in secondary schools is a more compelling case because classes at the secondary levels usually require a greater level

TABLE 6
Multilevel Multiple Regression Analysis of the Percentage of 7-12th Grade Classes Out of Field

	Model 1		*Model 2*	
	(b)	*(se)*	*(b)*	*(se)*
Intercept	41.4*	3.3	44.9*	3.06
Teacher qualifications				
Highest degree	-2.9*	.427	-3.2*	.41
Teaching experience	-.16*	.028	-.15*	.027
School demographic characteristics				
Poverty enrollment	.09*	.015	—	—
Minority enrollment	—	—	.11*	.01
Rural	-3.8*	.919	-2.0*	.93
Suburban	-1.2	.925	-.45	.902
School recruiting and hiring difficulties				
Teaching job openings	-1.7	1.01	-1.53	.956
Hiring difficulties	.03	.183	-.04	.176
Administrative practices/ organization characteristics				
Major/minor required of hires	-1.9*	.53	-1.7*	.517
Principal leadership	-1.3*	.38	-1.5*	.363
Hiring/assigning underqualified	1.1*	.53	.65	.520
Average class size	-.67*	.033	-.66*	.031
Starting teacher salary (by 1000)	.23*	.107	.04	.104
Presence of teacher union	.84	.77	1.34	.754
School size (by 100)	-.02	.06	-.13*	.058
Proportion of school-level Variance explained	.16		.19	
Sample Size (N)	18,770		19,921	

Notes: * p < .05 (Unstandardized coefficients displayed)

of subject-matter mastery and training on the part of teachers than do those at the elementary-school level and, hence, being taught by an out-of-field teacher could be more consequential for students at that level.

The two control measures of teacher qualifications are both related to the degree to which teachers are assigned out of their fields. Teachers without at least a bachelor's degree are, by definition, out-of-field. Teachers' experience is strongly related; beginning teachers are more likely to be misassigned than are more senior teachers. The data also show that teachers in both high-poverty and high-minority schools are more often out-of-field. However, while teachers in urban schools are more often out-of-field than teachers in rural schools, the difference between out-of-field teaching in urban and suburban schools is not statistically significant (at a 95 percent level of confidence).

Surprisingly, school hiring and hiring difficulties do not appear to be major factors related to the amount of out-of-field teaching in schools. In background analyses, I found a significant positive correlation between the degree to which a school has difficulty finding qualified candidates to fill their openings and the degree of out-of-field teaching in the school. But after controlling for other factors in Table 6, this relationship becomes weak and statistically insignificant. This finding raises a particularly interesting question: After controlling for these characteristics of teachers and schools, what administrative practices and organization characteristics of schools do have an independent association with the average amount of out-of-field teaching in schools?

The analysis shows that several aspects of schools are related to misassignment. For example, school districts vary in the extent to which they impose standards on the teacher hiring process, and these hiring regulations are related to the average degree of out-of-field teaching in schools. The SASS data (see Ingersoll, 2000) show that about two thirds of school districts have formal requirements that new teacher hires must hold a college major or minor in the field to be taught and, as shown in Table 6, teachers in schools governed by these district-level policies do less out-of-field teaching.

The data also show that an additional factor associated with the degree of out of-field teaching in a school is the perceived leadership effectiveness of the principal. Schools vary in how well their teachers rate the performance of their principals on attributes of "good" leadership (e.g., principals that recognize good teaching, communicate well, are supportive, back teachers up). The data in Table 6 show significantly less out-of-field teaching occurs in schools in which the teachers highly rate the leadership performance of their principals. It is unclear from this finding which aspects of principals' behavior may be related to their staffing assignment practices and whether the attitudes of teachers toward principals are a cause or effect of such practices.

While the fact of experiencing difficulty in finding candidates to fill teaching vacancies does not have an independent effect on the degree of out-of-field teaching, how school administrators chose to cope with their hiring difficulties does have an effect. The analysis in Model 1 shows more out-of-field teaching in schools that covered their vacancies by hiring less than fully qualified teachers, by reassigning teachers trained in another field to teach the unstaffed classes, or by using substitute teachers. In Model 2 this factor is, however, not quite statistically significant (at a 95 percent level of confidence).

In contrast, other schools administrators might opt to expand class sizes, add additional class sections, or cancel classes rather then use misassignment to cope with staffing difficulties. The analysis shows that average class sizes are strongly related to the degree of out-of-field teaching in schools. Schools with larger classes tend to have less out-of-field teaching.

Finally, the models tested the association of several other characteristics of schools with misassignment. Smaller schools have more out-of-field teaching in Model 2, although this predictor fails to achieve statistical significance in Model 1. Starting teacher salaries are weakly associated with higher levels of out-of-field teaching in Model 1 and fail to achieve statistical significance in Model 2. The presence of a teacher union is not related to the extent of out-of-field teaching in the school in either model.

Notably, these analyses failed to find any factors that accounted for the effects of poverty and minority enrollment. In other words, none of the variables when introduced to the models reduced the estimates for poverty and minority enrollment to a statistically significant extent.

Several cautions and limitations need to be stressed. First, it must be remembered the multivariate findings do not show causality, but represent associations between particular school measures and the degree of out-of-field teaching in schools. Second, the regression models account for only a portion of school-to-school differences in out-of-field teaching. Further research is needed to refine and verify these. If borne out by further analysis, these preliminary findings do, however, suggest important implications for both theory and policy concerning the problem of underqualified teachers.

IMPLICATIONS

The source of the problem of underqualified teachers, according to most researchers and commentators, lies primarily in inadequacies in the quantity of teachers produced (i.e., shortages) and in the quality of the preparation these teaching candidates receive (i.e., low standards for teacher training). Following this teacher deficit perspective, the dominant policy responses have been attempts to upgrade the quality of teachers through more rigorous training and testing and licensing requirements or to increase the quantity of teachers supplied through various recruitment strategies.

In contrast, the central hypothesis of this study is that fully understanding the problem of unqualified teachers requires not only examining the quantity and quality of the teaching force, but also examining the manner in which teachers are managed, employed and used. This analysis shifts attention to out-of-field teaching and shows that it is widespread, especially in those schools serving disadvantaged communities. Furthermore, the analysis shows that the frequency of out-of-field teaching is not due to a deficit in either the quality or the quantity of teachers. Rather, out-of-field teaching is a common administrative practice whereby otherwise qualified teachers are assigned by school principals to teach classes in subjects which do not match their fields of training or certification. This practice takes place as often as not in schools that do not suffer from teacher recruitment problems due to shortages. Hence, this analysis suggests that the above kinds of teacher reforms, while often highly worthwhile, will not eliminate the problem of underqualified teaching unless they also address the problem of misassignment. Recruiting new candidates into teaching and mandating more rigorous training requirements for them will not solve the problem of underqualified teaching if large numbers of such teachers, especially in disadvantaged schools, continue to be assigned to teach subjects other than those for which they were trained. Hence, this analysis suggests that schools are not simply victims. Focusing blame on teachers; teacher training institutions; or inexorable, macro, demographic trends diverts attention from the roots of this problem in the way schools are organized and teachers are managed.

An objective of this analysis was to investigate which aspects of the organization of schools are linked to the degree of misassignment in schools. The results suggest that the extent to which schools face teacher shortages and their attendant hiring difficulties are less crucial factors than how school administrators—especially school principals—respond to and cope with staffing decisions and challenges. In the face of difficulty finding qualified candidates to fill their teaching job openings, some school principals resort to hiring less than fully qualified teachers, assigning teachers of one subject or grade level to teach classes in others, or employing substitute teachers to cover hard-to-staff classes. These decisions, of course, result in more out-of-field teaching. Sometimes these choices and some degree of out-of-field teaching may be unavoidable. But the results also show that school principals vary in their staffing strategies. Sometimes, top-down regulations shape the choices available. For example, school districts that have formal regulations concerning minimal training requirements for new hires have less out-of-field teaching. But interestingly, one of the stronger predictors of the amount of out-of-field teaching in schools is the leadership performance of principals. The measure used for the latter was a composite indicator based on the evaluations of teachers and, hence, is highly subjective. Like the other factors, however, it is also highly suggestive. What all of these findings collectively suggest is a role for managerial choice, agency, and responsibility—elements that are often overlooked in the educational literature on the sources of underqualified teachers. Improving the assignment of teachers already in schools as a strategy for raising teaching quality is an alternative, less expensive strategy than trying to modify the quality or quantity of teacher training graduates. It also offers an intervention that can be undertaken immediately, as opposed to the lag time it takes for modifications in the output of teacher training institutions to actually lead to changes in classroom practice in schools.

While this analysis suggests some alternative staffing strategies for school leadership, none of these options will be easy or cost free. Staffing decisions involve some difficult trade-offs and tough choices for school administrators. For example, lowering class sizes, a currently popular reform idea, appears to come at the expense of increasing out-of-field teaching.[9] Likewise, the data suggest reducing the size of schools, another currently popular reform idea, may also result in more out-of-field teaching.

The results also contradict the view that teacher unions are a major source of out-of-field teaching. Schools with unions do not have more out-of-field teaching. Union work rules certainly have an impact on the management and administration of schools, but eliminating teacher unions will not eliminate out-of-field teaching.

The large-scale survey data analyzed here provide an overall portrait of the levels and sources of out-of-field teaching and can suggest which factors are associated with out-of-field teaching. But they have obvious limits for understanding the nature and details of school staffing processes. Follow-up field investigations are needed to illuminate the decision-making processes surrounding the hiring, assignment, and utilization of teachers in particular kinds of schools. What are the hidden incentives systems within which administrators make staffing decisions? What are the reasons behind the misassignment of teachers? How do particular teachers come to be teaching particular classes?

Although this analysis has begun to explore the factors related to school-to-school differences in out-of-field teaching, it does not address a larger question: Why is out-of-field teaching prevalent across the American K–12 education system as a whole? In addition to close-up, micro-level field studies, a second avenue for further research is macro-level, historical, and comparative investigation of the roots of this mode of organizing the work of teachers. One possible explanation is that the prevalence of out-of-field teaching is rooted in the semi-professional status of teaching—a predominantly female occupation.

Unlike Canada and many European and Asian nations, this country's elementary and secondary school teaching force is largely treated as lower-status, semi-skilled workers, especially those working in disadvantaged schools. Since the turn of the century American educators have promoted the view that teaching, like the traditional male-dominated professions, is highly complex work requiring specialized knowledge and skill and, like other professions, deserves commensurate prestige, authority, and compensation. These efforts have, however, met only limited success (Lortie, 1969; Ingersoll, 2000). The comparison with traditional professions is stark. Few would require cardiologists to deliver babies, real estate lawyers to defend criminal cases, chemical engineers to design bridges, or sociology professors to teach English. The commonly held assumption is that such traditional professions require a great deal of expertise and, hence, specialization is necessary. In contrast, underlying out-of-field teaching is the assumption that female-dominated precollegiate school teaching requires far less skill, training, and expertise than these traditional professions and, hence, specialization is less necessary. From this perspective, the continuing treatment and status of teaching as a semi-profession has resulted in what the data tell us, that out-of-field teaching is not simply an emergency condition, but a common and accepted administrative practice in many secondary schools in this country, especially those in disadvantaged communities. Therefore, the long-term solution to upgrading the quality of teaching and eliminating the practice of misassignment is to upgrade the quality of the teaching job. Well-paid, well-respected professions that offer good working conditions rarely resort to lowering standards as a coping mechanism.

NOTES

1. This chapter is based on a research report published by the Center for the Study of Teaching and Policy and supported under the Educational Research and Development Centers Program, PR/Award R308B70003, as administered by the National Institute on Educational Governance, Finance, Policymaking and Management, Office and Educational Research and Improvement, U.S. Department of Education. Opinions reflect those of the author and do not necessarily reflect those of the granting agencies.

2. A notable exception is recent work by Darling-Hammond (1999) on state-to-state differences in levels of qualified teachers. Her work traces the effects of a range of state-level contextual factors such as the presence of professional standards boards, the proportion of accredited teacher training programs, and the extent of teacher hiring standards at the school-district level on aggregate levels of qualified teachers in the state.

3. For further discussion of this debate over the necessity of teacher qualifications, see Ingersoll, 2001b.

4. For a detailed review and evaluation of a variety of different measures of out-of-field teaching, see Ingersoll, 2001a.

5. For details on definitions of these particular measures and a chart showing the categorization of disciplines and subjects into fields of training and fields of teaching assignment, see Ingersoll, 1999.

6. For more detail on this second measure of out-of-field teaching, see Ingersoll, 1995.

7. The data in column 1 of Table 5 refer to public elementary and middle school (Grades K–8) teachers whose assignment is preelementary or general elementary and who teach in self-contained classes. The latter refers to those who teach multiple subjects to the same students for all or most of the day. This excludes departmentalized elementary teachers and specialists such as who teach art, music, physical education, math, or special education to different students throughout the day.

8. The data in columns 2–8 of Table 5 refer to public secondary school (Grades 7–12) teachers who are departmentalized. The latter refers to those who teach subject-matter classes to different classes of students for all or most of the day. It excludes departmentalized teachers employed in middle schools.

9. For details on definitions of these particular measures and a chart showing the categorization of disciplines and subjects into fields of training and fields of teaching assignment, see Ingersoll, 1999, 2001a.

10. See, Haycock, 1998; Stecher, Bohrnstedt, Kirst, McRobbie, & Williams, 2001; and Bohrnstedt, Stecher, & Wiley, 2000 for insightful discussions of the unanticipated outcomes of class-size reduction reforms.

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CHAPTER 7

SCHOOL–FAMILY PARTNERSHIPS
Policy Implications for Urban Schools

Evanthia N. Patrikakou, Roger P. Weissberg, and Michelle I. Rubenstein

Parental involvement has surfaced during the recent years as an important influence on a child's schooling. Researchers and policymakers compellingly emphasize the importance of making parental involvement a priority in American education. Research has provided mounting evidence that parental involvement plays a crucial role in a student's academic progress (Dauber & Epstein, 1993; Eccles & Harold, 1996; Keith, Troutman, Bickley, Trivetter, & Singh, 1993; Patrikakou, 1996, 1997; Reynolds & Walberg, 1991, 1992), and policymakers included parental participation in the National Educational Goals of 2000, supported by all 50 governors. Goal 8 states, "by the year 2000, every school will promote partnerships that will increase parental involvement and participation promoting the social, emotional, and academic growth of children" (National Education Goals Panel, 1995, p.13). Other major legislation also encourages states, districts, and schools to foster parental involvement programs. For example, the Improving America's Schools Act of 1994 requires schools that receive Title I funds to implement comprehensive parent outreach efforts to address the needs of their community and reach all children and families.

From the first days of a child's life, the parent–child relationship is one of the most profound catalysts of social, emotional, and cognitive development. From the critical first attachment of the child to the parents to the later years of adolescent development, parents, through their behaviors, attitudes, and parenting practices, exert an enormous influence on the child's social, emotional, and cognitive growth (Parke & Buriel, 1998). For example, a toddler's social and language development is influenced strongly by the nature of the relationship they have with their parents. Even during adolescence, when the views of parents and adolescents seem to differ on several issues, conflicts frequently facilitate further social and emotional development (Holmbeck & O'Donnell, 1991).

Families are the first socialization system in which parenting styles interact with the child's development, and through this interaction children grow into social maturity (Santrock, 1996). Once children enter the stage of formal schooling, strong parental influences extend to the child's academic progress. Parenting styles continue to have a great impact on the child's academic achievement even in late adolescence (Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987), and parent attitudes and behaviors also continue to have a great impact on the adolescents' academic and life choices (Patrikakou, 1996, 1997; Reynolds & Walberg, 1991, 1992; Steinberg, Dornbusch, & Brown, 1992).

Numerous studies have indicated that parental involvement in children's education is the catalyst predicting student success from preschool through high school (Reynolds, 1989; Steinberg, 1996). The importance of parental involvement at school becomes even more pronounced when one reviews results from studies examining early school adjustment of low-income, minority children. The striking majority of studies indicate that, from the very early stages of schooling, parental participation enhances academic achievement and school adjustment (Reynolds & Bezruczko, 1993). The role of parental involvement has been identified as a key component of effective early childhood prevention programs since the creation of Head Start and Follow Through (Olmsted, 1991; Schweinhart & Weikart, 1988; Zigler & Muenchow, 1992). Specifically, effective interventions include parent activities in their repertoire and, therefore, "allow children greater opportunities to develop scholastic and social skills necessary for sustained [intervention] effects" (Reynolds, 1994, p.14). By including parental involvement activities, intervention programs enhance children's adjustment in primary grades and, because such adjustment is crucial for later school success, give children a better chance of achieving long-term cognitive, academic, and social benefits. All this evidence makes the inclusion of parents imperative, especially in intervention school programs in early childhood.

Due to the mounting evidence that emphasizes the important role that parents can play in their child's academic, emotional, and social development, as well as their impact on the effects of school interventions, researchers and educators alike have been calling for systematic efforts to increase parental involvement in children's education. Nevertheless, parental involvement still remains largely an "untapped resource" (Moles, 1993, p.21).

Parents are the obvious participants in parental involvement, but teachers are an equally important element in the equation. The question "Which is more important for a student's academic progress and social adjustment, the school or the family?" is rhetorical. Researchers recognize the overlapping influence of the two institutions, and theoretical as well as empirical models indicate that both school and home play an influential role in the development of a child (Bronfenbrenner, 1986; Epstein, 1987; Patrikakou, 1996). As Epstein (1992) noted, the term *school–family partnerships* should be used instead of parental involvement as it "emphasizes that the two institutions share major responsibilities for children's education" (p.1).

The present chapter, (a) presents a broader theoretical framework in which school–family partnerships can be conceptualized; (b) summarizes parent and teacher views on the most important aspects of developing and maintaining school–family partnerships; (c) reviews a sample of school–family partnership programs; and (d) discusses the implications of this analysis for future policy and practice in urban schools.[1]

A THEORETICAL FRAMEWORK OF SCHOOL–FAMILY PARTNERSHIPS

> Whatever the socioeconomic level, ethnic group, or type of family structure, we have yet to meet a parent who is not deeply committed to ensuring the well-being of his or her child. Most families are doing the best they can under difficult circumstances; what we should try to do is change the circumstances, not the families. (Bronfenbrenner, 1979, p. 849)

According to Bronfenbrenner's (1979, 1986, 1989) ecological theory, it is the broader environment with its values, regulations, and traditions that serves as a dynamic force in child development. The ecological theory provides one way to conceptualize interactions between home and school and how they relate to academic achievement. Within this framework, all the different sources that affect academic achievement are interacting constantly with the characteristics of the individual, forming circles of influence around him or her (see Figure 1). The individual is in the center of the system; the family follows in the next concentric circle, with school, peers, and other community influences to follow. All influences experienced by the individual in any given setting (e.g., home or school) belong to what is called the microsystem. Influences and interrelations among microsystems are depicted in the second level, which is called the mesosystem. The mesosystem is composed of interacting microsystems. Every time

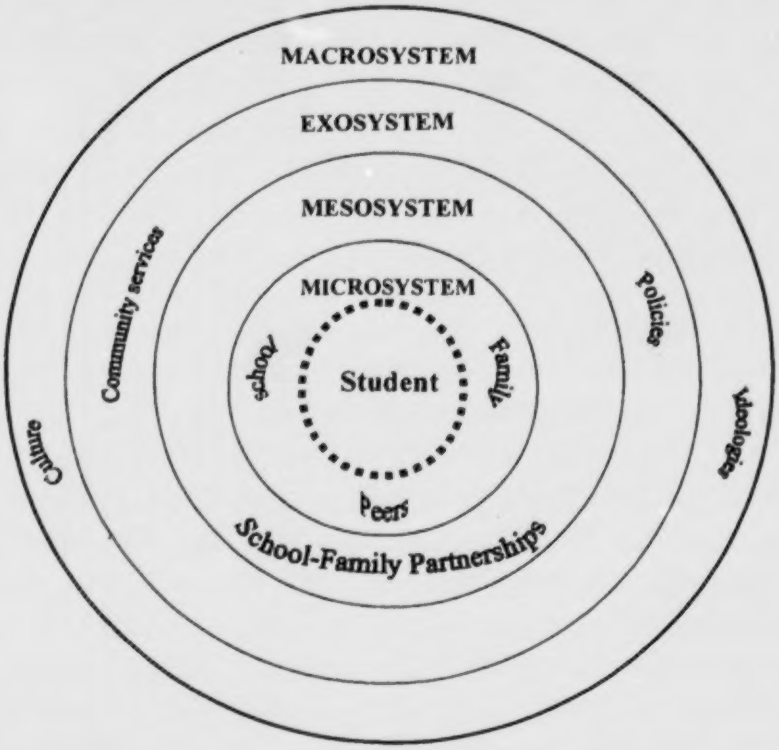

FIGURE 1
An Ecological Perspective of School-Family Partnerships.

an individual enters a new microsystem, the mesosystem expands to include the new entry. All participants other than the individual in interacting settings are part of the interconnections depicted in the mesosystem. The structure of the mesosystem is where family and school, especially parents and teachers, interact to contribute to the child's academic, emotional, and social development, and it is within this system that school–family partnerships can be cultivated. The existence of strong reciprocal links between home and school can have a positive influence on a child's development, whereas the lack of such links may become a risk factor in development (Weissberg & Greenberg, 1998). The next level is the exosystem, in which influences from broader social groups and institutions (e.g., school board or community services) are included. Although these settings do not include the individual directly, events occurring within them may affect the child. For example, changes in school policies may significantly affect a child's schooling and progress and alter interactions among microsystems and mesosystems. In the outermost level, the macrosystem is where values, traditions, ideologies, cultural characteristics, and institutional patterns can be found. Influences within this system include the effects of major historical events (e.g., wars) or more gradual socioeconomic changes such as the globalization of the economy. These broader issues can have a great impact on lower systems, including the mesosystem where school–family partnerships are to be found. For example, if a global economic crisis trickles down to the U.S. economy and causes significant budget cuts for school programs, school–family partnership programming, and other parental involvement initiatives will be affected by receiving smaller funds.

Within this framework, school–family partnerships can be conceptualized as sociological influences that affect a child's academic and socioemotional development. Specifically, two components can be identified within this set of systems, the *sociological* component, consisting of various forms of parent and teacher beliefs and practices with regard to school–family, partnerships and the *psychological* component, which concentrates on the perception of parental influences by the student, as well as the individual's psychological characteristics.

The student is in the center of the system and, in general, psychological factors are to be found within the circle of the individual, whereas sociological influences are represented in the outer circles. The filtering circle around the individual represents the child's perceptions of various events that, according to previous theoretical work (e.g., Eccles, 1983; Eccles & Harold, 1996), are instrumental in influencing outcomes related to academic achievement (Patrikakou, 1996, 1997).

Another reason that this framework provides a good fit for conceptualizing school–family partnerships is the emphasis developmental theorists have placed on the importance of the relationship between settings such as home and school. Almost two decades ago, before the issue of parental involvement became so popular, Bronfenbrenner (1979) recognized the increasing isolation of school from home and related it to the progressive decline of achievement scores. He also noted that this alienation between the home and school environments had an effect not only on the academic progress of children but also on their socioemotional development, citing increasing rates of child delinquency. What was then speculation based just on the "convergence between incomplete theory and incomplete data" (p. 848), is today unfortunately a confirmed hypothesis on sad statistics. School and family are two of the most important contexts of child development, and by bringing them closer, we will provide students with a structure and continuity that foster their cognitive and socioemotional competence. In Bronfenbrenner's (1979) words, "the developmental potential of a child-rearing setting [family or school] is increased as a function of the number of supportive links between that setting and other contexts involving the child or persons responsible for his or her care. Such interconnections may take the form of shared activities, two-way communication, and information provided in each setting about the other" (p. 848).

Closely related to the ecological framework is the notion of overlapping influence proposed by Epstein (1987, 1992). She places home and school influences in spheres that, although related, can be brought together or pulled apart depending on practices applied in each environment. Factors such as the child's developmental changes, as well as environmental factors, are the crucial mediators that bring the spheres closer or alienate them. In this model, as in that of the ecological theory, the child plays a central role. It is assumed that students are not passive recipients of the benefits that a good home–school relationship can provide. Instead, they are considered active players working toward their success at school. When home and school work as partners, both emphasizing the importance of education and facilitating and coordinating necessary resources to assist students in their efforts, the "student's own work is legitimized by this process of mutual support" (Epstein, 1992, p. 3). Disparity between home and school can impede children's development, learning, and academic performance (Dauber & Epstein, 1993) whereas continuity between family interactions and classroom interactions leads to higher achievement (Hansen, 1986).

The influences of school and family are interrelated and can reinforce each other's efforts to help children succeed in school. In school–family partnerships, parents, teachers, and students are brought to work together toward the shared goal of the child's success. Overall, parents and teachers seem to agree that parental involvement is an essential ingredient in school success (Weissberg, Schultz, Izzo, Shanahan, Hancock, Patrikakou, & Giller, 1997); however, parental involvement still remains an unexploited resource (Moles, 1993). Eliminating this discrepancy between attitudes and action is a major goal of school–family partnership programs. With respect to specific issues, do parents and teachers see eye-to-eye on how parental involvement can be implemented and the barriers lifted? The following two sections attempt to paint the picture from the parents' and the teachers' perspective.

SCHOOL–FAMILY PARTNERSHIPS FROM THE PARENT'S PERSPECTIVE: BENEFITS AND BARRIERS

> It is easy for me to be involved in her education because her teacher lets me know what is going on, what she has learned, and what she needs to learn. (A parent from an inner-city Chicago Public School)

One of the goals of school–family partnerships is to increase the involvement of parents in their child's education. Although parents seem to have generally positive attitudes toward their child's school and consider their goals to be similar to the goals that teachers have for students, parents believe that schools can do more to involve them in their child's learning (Epstein, 1986). Research has shown that parent attitudes are highly correlated with the school's practices to involve parents; parents who believe that the school is actively trying to involve them in their child's education are more likely to consider the school a good one and report that the school has a positive climate (Dauber & Epstein, 1993). In general, parents tend to give higher ratings to teachers and schools when they perceive that they are invited to participate in their children's education frequently (Epstein, 1986).

In order for school–family efforts to be effective and therefore successful in increasing parental involvement, schools must assess, among other things, the characteristics and the needs of the parent population they serve (Epstein, 1995). In this way, starting points for intervention can be identified and discussion on needs and implementation of school–family-partnership activities can be triggered (Epstein, 1995). One way to guide assessment efforts and assist in a more comprehensive structuring of school–family partnerships is through the use of parent and parent-involvement typologies. By using these conceptual organizers, schools can target various levels of school–family partnerships, assess current practices at each level, and focus on areas of weakness with more precision.

There have been many typologies of parents and parental involvement in education (Bauch, 1994). Parent-involvement typologies have been very widely used in research and program development efforts, whereas parent typologies—although important elements in the school–family partnership equation—seldom appear.

Parent Typologies

What is a parent typology? It is a way of categorizing parental attitudes and actions in regard to school and educational activities. Usually such behaviors are based on the parent's own experience with schooling and the educational system and other events that may affect a parent's involvement in the child's education. Berger (1995) offers the following parent typology: (a) parents who systematically avoid participating in school activities, (b) parents who participate after some encouragement from the school, (c) parents who readily respond to a school's invitation, (d) parents who enjoy school involvement and take initiatives, and (e) parents who enjoy exercising power and can dominate school activities.

The School–Family Project at the University of Illinois at Chicago uses another parent typology (Patrikakou, Weissberg, Smith, & Rubenstein, 2000). This categorization is based both on the parents' skills and life events that may influence their participation in their child's education (microsystem), and their school–family attitudes and practices (mesosystem). Although not mutually exclusive, the following four parent types have been identified:

1. Parents who have positive attitudes toward, and the necessary skills for, active and constructive involvement in their children's education.
2. Parents who want to help their children, but need some guidance, support, and reassurance to participate effectively in their children's education.
3. Parents who would like to participate in their child's education, but who face a basic-skills barrier, such as illiteracy or limited knowledge of English. Once the issue is addressed through special programs (e.g., adult literacy) they can become more actively involved in their children's schoolwork.
4. Parents who have serious personal problems (e.g., substance abuse) that interfere with their daily functioning, and impede them from participating in their child's education before resolving those issues.

Clearly, programs geared to attract the participation of one group of parents will not necessarily meet the needs of another. Recognizing the target audience of a given program and making an effort to ultimately reach all types of parents is critical. This goal may require additional program components or a merging of several programs.

Parent-Involvement Typologies

Parent-involvement typologies describe the role that parents can play in various environments, such as home and school. Although typologies vary on certain aspects, there is a significant overlap among them.

Two typologies that delineate different levels of parental participation as well as the efforts of schools to facilitate different and more extensive forms of involvement are those of Bloom (1992) and Epstein (1987, 1995).

According to Bloom's (1992) typology, parents can play seven roles along three levels. Specifically, the three levels are involvement, participation, and advocacy. Within the first level a parent can assume the type of spectator role in which the parent monitors the child's school progress but does not actively facilitate the learning process at home or reinforce the school routine and curriculum. It is the parent as teacher who actively assists the child with homework and establishes learning routines at home.

The second level of participation encompasses three types of parental involvement. The first, parent-as-accessory-volunteer, provides assistance to the teacher in activities such as chaperoning field trips, conducting fundraisers, or helping in other nonclassroom support services. The second type, parent-as-educational-volunteer, involves parents as teacher aides in the classroom through such activities as checking homework, reading to the children, or tutoring them. The third type within the participation level is parent-as-employee in which a parent is paid by the school to perform any of the previously mentioned activities in this level.

The third level of involvement is advocacy. Within this category, parents can play an important role in administrative procedures and decision making by participating in school councils, organizing other parents, or evaluating the results of programmatic changes. The second role that parents can assume within this level is that of mover-and-shaker in which a parent can initiate, implement, monitor, and evaluate basic structural changes of school systems on a local or wider basis.

Epstein's (1987, 1995) typology is the best known, as it is frequently cited in various studies in the broader area of school–family partnerships. The six types of involvement, or "six types of caring" as she calls them (Epstein, 1995, p. 704) are:

Type 1: *Parenting.* The basic obligations of the family, such as establishing positive home conditions to encourage school success.

Type 2: *Communicating.* The communication between home and school that facilitates the flow of information about school curriculum and the child's progress.

Type 3: *Volunteering.* The recruitment of parents to act as volunteers to help and support school initiatives and functions.

Type 4: *Learning at Home.* Parental involvement at home, such as helping children with homework and other learning activities, based on the information schools provide.

Type 5: *Decision Making.* Active parental involvement in school decisions and advocacy by lobbying for school improvements.

Type 6: *Collaborating with the Community.* The identification and dissemination of a network of available resources and services in the community to assist parents and schools in their efforts to better their children's education.

As mentioned at the beginning of the present section, typologies can be effective guides for needs assessment and useful tools to identify the strengths and limitations of home–school interactions (mesosystem). Based on the various parent-involvement typologies, several measurement instruments have been developed (for example see Epstein & Salinas, 1993; Hickman, Greenwood, & Miller, 1995; School–Family Partnership Project, 1997). Such instruments assist schools in evaluating the present status of school–family partnership activities and target specific areas of involvement for intervention. These measurement tools can also be used to monitor a program's effectiveness and guide future modifications. In general, typologies are necessary theoretical tools that are extremely helpful in assisting researchers and practitioners to organize their thinking and work in the field of school–family partnerships. But in practice, what challenges does reality hold that can interfere with the implementation of parental participation activities? What are some of the dynamics developed within microsystems and between microsystems that affect the mesosystem's home–school interactions? The following section presents the beliefs and barriers parents identify that affect involvement in their child's education.

Beliefs and Barriers

> Families today are just not like we used to know them...times and people have changed but the public school system hasn't changed...we need a system that fits new needs. (a teacher cited in Leitch & Tangri, 1988, p. 73)

Although a striking majority of parents and teachers agree that parental involvement is an important element in education (Weissberg et al., 1997), actual parental involvement "is surprisingly minimal" (Swap, 1993, p. 13). What contributes to this discrepancy between beliefs and practice? The past two decades have seen a rapid change in family and related societal demographics. A high percentage of mothers of school-aged children are working out of the home (Berger, 1995), single-parent families have doubled since 1970 (Braun & Swap, 1987), teen pregnancy has increased dramatically in the past decade (National Center for Health Statistics, 1991), the number of families living in poverty has increased (Braun & Swap, 1987), and a significant increase in linguistic and cultural diversity of students has taken place, which requires special attention (Berger, 1995). These rapidly changing demographics have made it more difficult for parents to participate in school activities and in their child's education in general.

The three major barriers that parents identify are (a) time, (b) lack of knowledge of what is expected of them and in what specific ways they can help their children at home, and (c) various sociocultural biases in the school environment.

Time

Time seems to be a major barrier impeding parents from participating in school activities and assisting their children with schoolwork at home. In a survey conducted by the School–Family Partnership Project (Weissberg et al., 1997) of more than 650 families whose children attended Chicago Public schools, parents reported lack of time or schedule conflicts as the two most important barriers to parental involvement; in general, 55 percent felt that parent activities at school are at inconvenient times.

With the increase in single-parent households and the dramatic rise in mothers of school-aged children entering the work force (Berger, 1995), time has become a valuable commodity for parents who struggle to make ends meet. It is important that schools recognize and adapt to this need by surveying parents about convenient times for activities, offering alternative means of communication, and most of all, understanding that it is not the parent's fault if he or she cannot participate because employment, family responsibilities, or other time restrictions. For example, parents reported having difficulty attending parent–teacher conferences during the day due to inflexible work schedules. Whenever schools made adjustments to accommodate parents' time restrictions, parents were very responsive, offering greater cooperation and support for teachers and the school. As Epstein (1986) indicated, parents are appreciative of any parental involvement and outreach efforts schools make, and they give high marks to teachers who incorporate parental involvement in their regular educational activities.

Child-care responsibilities also influence the parents' capacity to participate in their child's education. Over 80 percent of parents participating in a school–family partnership survey (Weissberg et al., 1997) reported that they had more than two children living at home. If it is hard for parents to attend the parent–teacher conference for one of their children, it is self-evident that the degree of difficulty increases tremendously for two or more. Espinoza (1988) reported that many families did not have child-care resources or a live-in caregiver, which imposed a big obstacle for their participation in school activities. Alternative child-care and after-school programs offered by community organizations can offer parents a helping hand so they can attend school events. Berger (1995) also suggested that schools should provide some form of childcare on days that parental participation is essential such as for parent–teacher conferences. In that way parents can have the opportunity to participate and actively contribute in their child's education.

Lack of Knowledge

An important ingredient of parental involvement and successful school–family partnership practices is consistent communication between parents and teachers (D'Angelo & Adler, 1991; Dornbusch & Ritter, 1988; Patrikakou, Weissberg, Smith, & Rubenstein, 1998). Most parents report that they would like to know what their children are learning at school and how they can be involved in their education (Epstein, 1992). Parents feel that schools should inform them about their curricula as well as about ways to assist their children at home. Chavkin and Williams (1987) reported that 90 percent of parents believe that parental involvement in their children's school would increase if they had more information and understood better what their children were learning. Epstein (1992) found that 90 percent of parents of elementary and middle–school students believe that the school should tell them how to get involved and help their children at home.

Even providing parents with general information can be sufficient to trigger noticeable change. Dornbusch and Ritter (1988) reported that by merely informing parents through a newsletter that parental participation is associated with higher academic achievement, attendance rates at school events increased dramatically.

Biases and the School Environment

Ethnic and cultural diversity is increasing in the United States, and the ability of schools to prepare minority students for full participation in American life and society has been questioned. During the past decade, researchers have investigated the issue of parental participation and differences among various cultural groups (Patrikakou, 1997; Steinberg et al., 1992). The number of children up to 17 years old whose primary language is other than English is expected to triple by the year 2000, and underachievement of minority or disadvantaged school children has been extensively discussed (see for example International Academy of Education, 1995).

Disadvantaged children often experience adverse conditions in a variety of settings such as poverty and lack of resources in the family, school, or community. In addition, parents of such children often have limited education and negative personal experiences with the educational system, leading them to mistrust and often fear the school environment (Menacker, Hurwitz, & Weldon, 1988). Such attitudes pose a serious obstacle for parental involvement and may influence the children's perceptions and their school performance. To make matters worse, teachers tend to communicate with parents primarily when there is a problem at school. This association between school and bad news only reinforces the parents' reluctance to get involved and fuels their defensiveness when dealing with the school system (Moles, 1993).

Cultural differences impose a variety of barriers for school–family partnerships and increase the perception gap between parents and teachers. Linguistic differences that include not only English as a second language but also nonmainstream English dialects can lead to various problems such as paternalism and lower expectations for disadvantaged parents and their children (Moles, 1993). By expanding the opportunities for positive interaction, remediating negative perceptions, and increasing parent and teacher skills on school–family partnerships, the process of regaining faith in education and the school system can begin. The development of positive, trusting attitudes toward the school, however, is a slow process that requires constant attention, systematic and methodical structuring, frequent evaluation, and most importantly the school's commitment to establish and maintain a constructive partnership with parents. Teachers and schools identify several issues that can restrict their involvement in school–

family partnerships. The following section presents what teachers identify as important issues when discussing parental involvement outreach efforts.

SCHOOL–FAMILY PARTNERSHIPS FROM THE TEACHER'S PERSPECTIVE: BENEFITS AND BARRIERS

> Our school can extend itself more to the parent. Sometimes the parents need a little push or motivation. If the parent can't come to the school to support their child, we must go to them. (A Chicago Public School teacher)

Successful implementation of parental involvement in schools depends on teacher perceptions and practices on the issue. "The teacher is the glue that holds the [school–family] partnership together" (Moore, 1991; p.19). Little has been done to explore the relationship between teachers' perceptions of parental involvement behaviors and student outcomes, such as academic achievement and social adjustment.

Teacher perceptions of parental involvement not only affect the teachers' participation in such programs but also play an instrumental role in influencing the teacher's relationship with the student. Positive perceptions can promote a "teacher's relationship with students in the way of greater attention or increased expectations for their school success" (Reynolds, Weissberg, & Kasprow, 1992; p. 616; also see Kohl, Patrikakou, Weissberg, Reynolds, & Kasprow, 1998). Therefore, understanding the relationship among teacher perceptions, sociodemographic factors, and children's educational outcomes is important not only for the successful implementation of school–family partnerships, but also because teachers' views of the parental involvement are closely related with the child's daily functioning in the classroom.

An overwhelming majority of teachers agree that parental involvement contributes to more successful students and a more positive school climate. However, only 32 percent feel that it is their responsibility to involve families (Connors & Epstein, 1994), and only half believe that they can change parent behaviors (Dornbusch & Ritter, 1988; Epstein, 1992; Epstein & Dauber, 1991). This indicates that teachers do not perceive themselves as effective agents of change and, therefore, may not be actively involved in parental involvement efforts. Since they don't believe they can improve parental participation, teachers may not contribute adequately to this cause.

Training

The reluctance on the part of the teachers to actively involve parents may be partially due to insufficient training in developing the necessary skills (Chavkin & Williams, 1989; Moore, 1992). The role of teachers has changed, and current societal trends call for them to work not only with children but also with adults. Armed only with traditional training, teachers when out in the field, face problems for which they feel unprepared. Specific courses targeting the issues of parental involvement and school–family partnerships should be offered in undergraduate and graduate programs to assist future educators to redefine their professional role by acquiring necessary skills for being effective partners (Epstein, 1995). Teachers report that additional training on the issue of parental involvement is necessary for parental involvement efforts to be implemented successfully and for teachers to learn how to better connect with their students' families (Connors & Epstein, 1994). However, as Chavkin and Williams (1989) indicated, in spite of the fact that 87 percent of teachers and 92 percent of administrators believe that special training is necessary to work with parents effectively, little teacher training in parental involvement takes place as part of prospective teachers' curriculum. For example, only 4 percent of the teachers had taken a course on parental involvement as undergraduates, while 37 percent have had only one class session devoted to the topic (Chavkin & Williams, 1989). As the body of evidence supporting the importance of parental involvement in education grows, the need for colleges of education to include relevant courses in their required curriculum becomes even more pronounced. Teacher colleges should acquaint undergraduates with the current findings on the importance and benefits of parental participation and provide them with strategies to reach out to parents more effectively to make the most out of this important resource (Rich, 1988). In-service training and relevant support should also be offered to practicing teachers in order to provide them with the opportunity to enhance their skills in involving parents and effectively use this significant agent of improvement.

Urbanism

Teachers working in urban areas especially need additional skills for working with high-risk families (Moore, 1992). Teachers in urban schools report that, although they want parents to be involved in several learning activities, parents do not respond accordingly (Epstein, 1992; Epstein & Dauber, 1991). Burton (1992a, 1992b) found that teachers in inner-city public schools often display relatively negative attitudes toward parents and school-based programs to support parents. Interestingly, although very few schools have specific programs to help parents understand how they can get involved in those learning activities, teachers tend to blame parents for the latter's low level of involvement (Epstein, 1992; Epstein & Dauber, 1991). Teachers in inner-city Chapter 1 schools indicate that most parents are not involved in their children's education and they don't seem to have the intention to become more involved (Dauber & Epstein, 1993).

Parent Demographics

As discussed earlier in this chapter, societal demographics have changed rapidly in recent years. Teacher perceptions of parents and families seem to be partially influenced by demographic factors, such as the parents' education, socioeconomic status (SES), or marital status. Not surprisingly, better-educated parents receive higher teacher ratings on parental involvement (Epstein, 1990). Initial evidence indicates that other sociodemographic factors such as the child's age, gender, race, family structure, and mobility are critical in shaping teachers' perceptions of parental involvement. Epstein (1990) noted that teachers do not feel that single parents are sufficiently involved in their child's education at home, despite indications that single parents were spending more time than married parents helping their children with homework. Grade level was also an important factor in the Epstein (1990) study, as teachers of younger children tend to give parents higher ratings, viewing them as more helpful than did teachers of older students.

Too Much to Do, So Little Time

Although increased parental involvement has major and obvious advantages, from the teachers' perspective, more contact with parents increases teachers' and other school personnel's responsibilities and raises various concerns about time and heavy work loads. Both issues need to be addressed to improve teacher perceptions and practices concerning parental involvement (Becker & Epstein, 1982; Burton, 1992b; Chavkin & Williams, 1989; Moore, 1992; Purnell & Gotts, 1985). Teachers feel overburdened, have limited resources available to them, and view parental involvement efforts as being outside their expertise (Burton, 1992b). Often, teachers do not know how to involve parents effectively or how to use them as a resource. Consequently, they resist playing a family-related role and may display a negative attitude toward parental involvement efforts. As one teacher remarked, "people seem to want teachers to take on psychologist, counselor, and social worker jobs. If I try to be the best in all, I will no longer be a teacher" (Burton, 1992b; p. 41).

The previous two sections examined parent and teacher views on school–family partnerships, and from each side's perspective there are important issues that may interfere with the implementation of school–family partnership programming. The following section presents examples of school–family partnership programs and how they attempt to address some of the issues raised by parents and teachers to facilitate the mesosystem's interactions.

BRINGING PARENTS AND TEACHERS TOGETHER: SCHOOL–FAMILY PARTNERSHIP PROGRAMS

School–family partnership programs try to bridge differences in perceptions and address practical issues and barriers that emerge when parents enter the education stage as active participants in their children's learning. A great variety of programs exists in the broader area of school–family partnerships that vary tremendously in their scope, strategies, targeted population, and use of evaluation. In this section we will present three programs that address some of the barriers raised by parents and teachers as impeding the development of home–school partnerships.

The School–Family Partnership project at the University of Illinois at Chicago

The School–Family Partnership (SFP) project at the University of Illinois, Chicago, is a federally funded effort through a grant from the Mid-Atlantic Laboratory for Student Success, Center for Research in Human Development and Education at Temple University. The project's mission is to develop and implement strategies and materials that will enhance two-way communication between parents and teachers, and increase parental involvement both in home and in school learning activities. In this phase, the SFP project targets primarily teachers and parents of elementary-school grades.

The project began by identifying existing practices and beliefs about home–school relations through an extended literature review. Later, parent and teacher questionnaires were constructed and a series of surveys were conducted. Currently, the project's focus is on the development of efficient intervention strategies and materials to assist teachers in establishing and maintaining school–family partnerships.

Our surveys revealed several interesting points that guided our thinking in designing the SFP project's intervention. Issues such as creating a positive communication between home and school, keeping parents informed about schoolwork, and offering specific ways parents can be meaningfully involved in the educational process came up in our investigation. Although both parents and teachers agreed that parental involvement is an important ingredient in the educational process, specific aspects that can further facilitate parental participation were not systematically implemented. For example, 79 percent of teachers reported that in a typical week they had sent home a note at least once to let parents know about a problem their child faced at school, and 71 percent of teachers had placed at least one call to the student's home for the same reason. However, only 58 percent

TABLE 1
Teacher-Reported Outreach

Items	*Less than 1 time* %	*1-2 times* %	*3-4 times* %	*5 times or more* %
How often do you do these in a typical week?				
Send a note to parents to let them know their child is having a problem at school.	20	46	20	71
Call parents to let them know their child is having a problem at school.	26	48	21	5
Send a note to parents to let them know their child is doing well at school.	41	41	8	10
Call parents to let them know their child is doing well at school.	60	35	0	5

of the same teachers reported sending at least one positive note during a typical week, letting parents know about something positive their child did at school. Even fewer teachers (42 percent) placed a call home to inform parents of something positive the child did at school (see Table 1).

On the issue of homework, teachers reported that several of their students completed their homework on an average night, but not necessarily well. Educators also agreed that performance would improve if someone at home could help the children with homework, but they voiced concern that in certain cases someone else may have completed the homework instead of the student (see Table 2).

TABLE 2
Teacher-Reported Percentages on Homework
Completion and Accuracy Issues

Items	*0%-25%*	*26%-50%*	*51%-75%*	*76%-100%*
On average, how many of your students...				
do their homework?	6	12	18	64
do their homework well?	9	15	39	34
have somebody else do the homework for them?	79	14	7	0
would do better in school if someone at home could help them with homework?	33	21	18	28

TABLE 3
Parent-Reported Percentages on Homework Issues

Items	*Less than 1 day* %	*1 day* %	*2-4 days* %	*5-7 days* %
How many days do these happen during an average week?				
I make sure that my child has a quiet place to do homework.	6	3	28	63
I check that my child's homework is done on school nights.	5	3	18	74
I help my child with homework.	6	4	22	68
My child has trouble understanding homework.	44	22	24	10
I have trouble understanding my child's homework.	64	17	10	9

Many parents reported being involved in their child's homework several days during an average week. Although the children of the parents surveyed were attending early elementary-school grades, 36 percent of parents reported having trouble understanding homework assignments at least once a week, and 56 percent indicated that their child encountered difficulties understanding the assigned homework (see Table 3). However, teachers reported that only 16 percent of parents had asked for help understanding the child's homework two or more times a month, and only 20 percent of students had approached them before or after school with homework questions (see Table 4).

TABLE 4
Teacher-Reported Percentages on Homework Issues

Items	*Never* %	*1 time* %	*2 or more times* %
How often did these happen this month?			
A parent complained that you assign too much homework.	84	8	8
A parent asked for help in understanding a child's homework.	44	40	16
A child came to you with a homework problem before or after school.	62	18	20
A child's performance improved after you spoke with a parent.	10	41	49

In addition to the descriptive information gathered from the surveys, data were analyzed to uncover the strongest predictor of parental involvement. Results indicated that, after controlling for sociodemographic factors (e.g., gender, race, and employment levels), the strongest predictor of parental involvement both at home and at school was the parents' perception of teacher outreach. Specifically, the more parents perceived their child's teacher as valuing their contribution to their child's education, trying to keep them informed about their child's strengths and weaknesses, and providing them with specific suggestions to help their child, the higher was the parents' involvement (Patrikakou & Weissberg, 2000).

On the basis of the theoretical frameworks and empirical findings presented earlier in this chapter—as well as the issues of lack of time, knowledge, training, and the need for the creation of a positive school environment that parents and teachers often raise—the SFP project has identified several essential ingredients of school–family partnership programs that it has integrated into the project's philosophy and scope (Patrikakou & Weissberg, 1999). Although these components also appear in other partnership programs, their integration within a comprehensive theoretical framework, and their inclusive application to the program's strategies and materials is a relatively new approach. Some of the project's essential elements are outlined below:

1. Assessing parents' needs, views, and practices on parental involvement at the beginning of the school year is an essential first step with twofold benefits: (a) it assists teachers in planning their parent outreach more effectively, and (b) it conveys an important message to parents that their perspective is useful and respected by the school. Assessment is most productive when it continuously monitors the effectiveness of partnership strategies and use of materials throughout the school year. An end-of-the-year (summative) evaluation will help give closure to the year's efforts as well as provide valuable information for the upcoming year's planning.
2. Creating a school environment that welcomes parental involvement and conveying positive attitudes toward school–family partnerships is another important ingredient. In this way, the message that parents are valuable contributors to the child's education can be reinforced for both parents and teachers.
3. Providing ongoing training and materials to educators is of paramount importance. Few colleges of education offer a course on parental involvement and most teachers are underprepared to engage in school–family partnerships (Chavkin & Williams, 1989). Providing guidance to teachers is key for the success of a school–family initiative in that teacher perceptions regarding roles that parents can play in their children's education can be expanded, and

the parent outreach repertoire used by teachers can be enriched significantly.

4. Establishing and maintaining a regular two-way (reciprocal) communication between home and school is an essential part of a successful partnership. Parents who perceive that teachers are making systematic efforts to communicate with them are more likely to be involved in their child's education both at home and at school (Patrikakou & Weissberg, 2000). Regular home–school communication strengthens the connection between parents and teachers and facilitates a reciprocal exchange of information, which leads to increased benefits for children's learning.
5. Offering specific information to parents about ways in which they can be involved in their child's education both at school and at home is a key to keeping parents informed and actively participating in learning activities in which they can engage with their children. By sharing with parents the ways in which they can extend learning from the classroom to the home and beyond, parental involvement becomes more meaningful. Parents can then share the learning process with their children and maximize their academic, emotional, and social development.

On the basis on these important factors (Patrikakou & Weissberg, 1999), the School–family Partnership project has created a series of materials including brochures,[2] measurement tools, and a Teacher's Guide to the program's implementation. The Guide covers three major areas: home–school communication, parental involvement at home, and parental involvement at school. In addition to a general overview of school–family partnerships, the Guide provides teachers with specifics for each of the three areas including strategies, their rationale, and ready-to-use materials designed to enhance the degree of the program's implementation and its effectiveness. In this systematic way, the various issues raised by teachers that constitute barriers for school–family partnerships are addressed and, through the use of the program's planning and implementation tools, educators can more actively involve parents and maximize the benefits from their interactions with the student's family.

Chicago Child-Parent Center and Expansion Program

The Chicago Child–Parent Center and Expansion Program (C-CPCEP) is an early childhood educational intervention for children at risk for academic underachievement and school failure (Reynolds, 1994, 1997, 1998; Reynolds, Bezruczko, Mavrogenes, & Hagemann, 1990; Reynolds & Bezruczko, 1993; Reynolds & Gill, 1994). The program is federally funded through Title 1 of the Elementary and Secondary Education Act and is the second oldest federally funded early childhood intervention program for disadvantaged children (Reynolds, 1994). The CPCEP began in 1967 and there are currently 24 Chicago CCPCs operated by the Chicago Public Schools (Reynolds, 1997). This program provides educational and family support services for disadvantaged children and their families and provides a maximum of 6 years of continuous intervention services from ages 3 to 9. The goal of the program is to foster children's social development, school readiness, and academic achievement. Its major focus is to expand parental involvement opportunities primarily at school, including serving as a classroom volunteer or in parent room activities, participating in school activities, and engaging in educational and vocational opportunities. At least one half-day per week of parental involvement in the child–parent center is required.

Program participants displayed higher reading and math achievement compared with non-CCPC children, and this difference remained significant through eighth grade. Program participants also had significantly fewer incidences of grade retention and special education placement compared with children in the nonintervention group failure (Reynolds, 1994, 1997, 1998; Reynolds, Bezruczko, Mavrogenes, & Hagemann, 1990).

The CCPC program's emphasis on parental involvement at school provides parents with an opportunity to improve their educational and vocational skills, and it creates a school climate that is welcoming for parents fostering positive relationships between themselves and the teachers. These gains in parental involvement lead to higher parent satisfaction with the quality of their children's schooling and higher academic achievement (Reynolds & Gill, 1994). The implementation of the CCPC program has indicated that, by addressing issues such as those described earlier in this chapter (i.e., lack of knowledge, urbanism, and parent demographics), school–family programming can be effective in improving parental involvement attitudes and practices and in increasing the chances for children's school success.

The School Development Program

One of the most well-known models is Comer's School Development Program (SDP). The goal of the SDP is to strengthen the alliance between parents and teachers and to foster greater continuity between home and school to enhance children's learning and achievement (Comer, 1989, Comer & Haynes, 1991). The SDP aims to establish a positive school climate that acknowledges the strengths of all families and facilitates home–school communication (Ascher, 1993; Cauce, Comer, & Schwartz, 1987). The SDP reflects a true partnership approach and emphasizes the shared responsibility of parents and teachers in supporting children's learning. The project began as a collaborative initiative between the Yale Child Study

Center and the New Haven Public Schools and was initially piloted in two public elementary schools in 1968 (Comer, 1980). Currently the SDP program is being implemented in 721 schools throughout the country (Comer, Haynes, Joyner, & Ben-Avie, 1996).

The SDP uses a nine-component process model that includes three mechanisms, three operations, and three guiding principles. The three mechanisms include a School Planning and Management Team (SPMT), a Student and Staff Support Team, and a Parent Program. The School Planning and Management Team is responsible for implementing the three operations, which are the creation of a comprehensive school plan, staff development activities, and periodic assessment and modification. The three guiding principles include a "no fault" approach, consensus decision making (rather than voting), and collaboration among the participants on the SPMT and the principal.

Several studies have demonstrated that program participation is associated with increased academic performance in reading and math, improved behavior and school adjustment, enhanced self-concept, more positive ratings of classroom climate, and decreased parent–teacher conflict (Cauce, Comer, & Schwartz, 1987; Comer, 1980; Comer & Haynes, 1991).

The SDP assesses a range of issues that parents and teachers feel are important for school–home relations. The program places an emphasis on communication between parents and educators and through the guiding rules it establishes a well-defined basis for everyone involved in a child's education to work together. It recognizes that well-informed parents can be important contributors to the educational process, and in this way it addresses the issue of lack of knowledge that many parents often raise regarding efforts to help their child with schoolwork.

All three programs that were described above attempted to address some of the issues affecting home–school relationships. The School–Family Partnership program targets primarily teachers and works toward remediating their concerns about training, time, and the changes in parent demographics. The program also addresses two of the major points raised by parents: (a) school climate and the lack of knowledge of what is taking place at school, and (b) ways in which they can assist their children achieve. The Chicago Child-Parent Center and Expansion Program targets parents and offers them opportunities for active school participation, as well as educational and vocational training. In this way, the program's training improves parenting skills and keeps parents informed about ways they can be involved in school activities. The third program presented in this section of the chapter, the School Development Program, calls for changes in the school's climate and offers a structure within which positive changes can occur. The program offers opportunities for positive interactions among the adults involved in a child's education and places emphasis on the importance of communication and home–school collaboration.

CONCLUDING REMARKS AND FUTURE DIRECTIONS

School–family partnerships can serve as facilitators within a child's mesosystem in which the two most important microsystems in a student's life (family and school) interact. Effective home–school relationships take a long time to form and become established. The process of developing positive, trusting attitudes toward the school is sometimes a slow one that requires commitment, systematic planning, and persistence. Thanks to the theoretical and empirical advances of recent decades, we have a better understanding of the important factors that contribute to the formation of an effective school–family partnership program, as well as their consequences.

In the present chapter,

a. we presented a broader theoretical framework in which school–family partnerships can be conceptualized;
b. we summarized parent and teacher views on several important aspects for the development and maintenance of school–family partnerships, especially in urban schools; and
c. we reviewed a sample of school–family partnership programs that address the issues raised by parents and teachers, and offer ways to comply with Title I requirements for parental involvement.

Parental participation plays an instrumental role in increasing the academic gains for inner-city children and youth. A recent study that investigated early childhood programs in urban areas found that programs with a parent component produced long-term gains (Miedel & Reynolds, 1999). Specifically, parental involvement in preschool and kindergarten was associated with

a. higher reading achievement at age 14,
b. lower rates of grade retention, and
c. fewer years in special education.

Such findings further encourage the inclusion of parental involvement activities in intervention programs, beginning early in a child's schooling. By encouraging parental involvement, a strong home–school link can be developed to facilitate students' academic, emotional, and social development, and foster it beyond the early childhood years.

The importance of school–family partnerships to maximize the potential for inner-city students is also underlined in a recent report to Congress by an independent review panel on the Evaluation of Federal Education Legislation (U.S. Department of Education, 1999). The panel recognized that the directions set for Title I in 1994 indicated the importance of creating and maintaining strong home–school–community links and offered recommendations to improve on existing guidelines. For example, the panel encouraged states, districts, and schools to invest in staff and programmatic development and evaluation to ensure that school–family partnerships are systematically implemented.

Programs such as Goals 2000, Title I, and the School-to-Work Opportunities Act have taken into account research findings and empirical advances and have set guidelines and mandates for schools in an effort to increase parental involvement and, through it, children's chances for success. Specifically, the Title I funding framework addresses crucial issues such as integrating children who receive Title I services with the rest of the school community; keeping parents informed about academic standards, evaluation procedures, and school programs; and encouraging the combination of Title I with other funds (e.g., Goals 2000) to support ongoing training and materials that support school–family initiatives (Epstein & Hollifield, 1996). In spite of significant improvements in the 1994 Title I legislation there are still crucial issues that require further clarification. In light of the upcoming Title I reauthorization, a discussion of such issues assumes an even more important role. One of the areas that require the most attention is the implementation mechanics of school–family initiatives. Although implementation issues of school–family partnership programs have not been researched as exhaustively as parental involvement per se, the existing literature and our experience from implementing the SFP program in urban schools guide us to suggest the following:

1. *Early beginnings and sustained momentum.* Home–school partnerships should begin early in the child's schooling to maximize the benefits for children's socioemotional and academic development. If early childhood interventions encompass a strong parental involvement component, they are more likely to show long-term effects for children, families, and schools. It is of equal importance that the momentum be continued as children move to higher grades. Research evidence indicates convincingly that parents continue to have a strong impact on their children during adolescence. Therefore, middle and high schools must also implement school–family partnership programs, taking into account the developmental stage of the child. Strong school–family partnerships will ease the transition from elementary to middle school, and later to high school, and help students cope with the new demands of their schooling (e.g., increase of subject matter and complexity of homework).
2. *Assessment and planning.* Although the incorporation of school–family partnerships in the schools' agenda is essential, the crucial question that arises is: "Which program?" Certain elements of partnerships are common across programs and school–family activities; however, each school constitutes a unique environment with

specific needs and chemistry between parents and teachers. Therefore, before implementation of any kind of partnership program, it is imperative that an initial assessment be conducted to evaluate current practices and areas that require improvement. In this way, the activities of a school–family partnership program will be responsive to specific needs and will address issues with more precision, increasing the probability and degree of success. After the initial assessment is conducted, results need to be tabulated so that strengths and weaknesses are identified. On the basis of these findings, administrators and educators will have a much more precise picture of what type of school–family partnership program will most benefit their school and they can choose accordingly. Regardless of the program that will be chosen, systematic planning of school–family partnership goals must occur at the beginning of the school year. Planning is as essential for the success of teacher outreach to parents as it is for the successful implementation of the curriculum. The same principle of the road map applies for both: if you do not know where you are going, you will not know if you have arrived!

3. *Program Coordination*: Improving America's Schools Act of 1994 encourages schools to combine funds from various funding sources to support, among others, comprehensive school–family partnership efforts. But apart from funding, the various programs that exist in any given school must also be coordinated. It is not unusual for several programs and various program components to operate in a school without their paths ever crossing; a phenomenon that can be called programmatic isolation. Many programs such as parent literacy and school–family partnerships are complementary and should be coordinated and viewed within the broader context of enhancing parental involvement and increasing the children's chances for success.
4. *Wise Investments-High Returns.* Only a small percentage of teachers have received specific pre-service training on parental involvement because few colleges of education offer such a course. It should therefore be a high priority for districts and schools to provide in-service training for educators so that they can establish effective partnerships with parents. The skills teachers need to interact successfully with parents are not innate but must be demonstrated and modeled as an integral part of their training. By investing in staff training, schools will significantly improve school–family partnership practices and maximize parental involvement and student outcomes.
5. *Monitoring and Evaluation.* School–family partnership activities must be monitored and evaluated throughout the school year. As part of their planning, administrators and educators need to examine the effectiveness of the strategies and materials they use, ask for parent

> feedback, and calibrate their practices accordingly. In this way, activities can be fine-tuned and have a greater potential of yielding positive results. An end-of-the-year evaluation also provides closure to the year's efforts and valuable guidance for next year's planning.

Parental involvement and school–family partnerships have emerged as crucial factors in enhancing children's development and education. But as Cole noted, "ideas are only as important as what you do with them" (Bronfenbrenner, 1979, p. vii). School–family partnership programs have illustrated ways in which parents and teachers can work together constructively to maximize the benefits for children's education. By prioritizing such programming in schools and ensuring their high-quality implementation and monitoring, we can put this great idea of parental involvement into practice.

NOTES

1. This research was supported, in part, by a grant from the Laboratory for Student Success at Temple University Center for Research in Human Development and Education. Portions of this chapter appear in Reynolds, Walberg, & Weissberg (1999).

2. Parent and teacher brochures on the topics of parent–teacher communication, report card sharing, and homework may be obtained from the Laboratory for Student Success services (LSS), (1301 Cecil B. Moore Ave., Philadelphia, PA 19122-6091; telephone: 800-892-5550); or visit the LSS website at http://www.temple.edu.LSS, or contact the School–Family Project at the University of Illinois at Chicago (c/o Dr. Eva Patrikakou, Department of Psychology M/C 285, 1007 West Harrison Street, Chicago, IL 60607-7137; fax: 312-355-0559).

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CHAPTER 8

TOWARD EFFECTIVE STRATEGIES IN RAISING ACADEMIC PERFORMANCE

Findings from a National Study of Effective Title I Schoolwide Programs

Margaret C. Wang and Kenneth K. Wong

The 1994 Improving America's Schools Act (IASA) established an ambitious agenda for systemic improvement in schools with a high concentration of students from at-risk backgrounds. The legislation promotes the schoolwide program as a reform strategy for Title I-funded schools. It signals a change from emphasis on regulatory compliance to one of accountability for policy coherence and coordinated delivery of services to students in high poverty schools. These expectations are further reinforced by the 1997 enactment of Public Law 105-78, in which Congress appropriated funding for a national initiative known as the Comprehensive School Reform Demonstration. This program provides initial support for schools interested in implementing a research-based, comprehensive approach to school reform.

Since the inception of the Elementary and Secondary Education Act in 1965, the impact of Title I/Chapter I programs on student outcomes has been mixed, and the database on the implementation and outcomes of

Title I schoolwide programs is scanty. An extensive review of the literature on Title I schoolwide programs since the 1988 Hawkins-Stafford amendment suggests that only 13 major empirical studies on schoolwide implementation have been conducted (Wong & Meyer, 1998). The database in most of these studies predated the enactment of IASA in 1994 and has very limited, reliable information on student outcomes in schoolwide programs (Wong & Wang, 1994; Wang & Wong, 1997). As Congress considers the upcoming Title I reauthorization, there is a clear need to fill the research gap on how schoolwide programs affect teaching, learning, and student outcomes and to develop a critical empirical base for strengthening the implementation of the Title I programs.

Although the literature provides some research-based information on how schools have made use of the schoolwide initiative, policymakers and practitioners need to be much better informed about the implementation requirements and the extent to which program implementation leads to the school and classroom level outcomes anticipated by Congress, as outlined in the schoolwide program provision of the IASA. Given the current emphasis on accountability, the Laboratory for Student Success (LSS) initiated a national study of Title I schoolwide program implementation.

The National Study of Effective Title I Schoolwide Programs is a multiyear collaborative project between the LSS, the Mid-Atlantic Regional Educational Laboratory at the Temple University Center for Research in Human Development and Education, and four other Regional Educational Laboratories: Appalachia Educational Laboratory, North Central Regional Educational Laboratory, Northwest Regional Educational Laboratory, and Southeastern Regional Vision for Education. The twofold goal of the study is to: (a) contribute to a national database on the implementation and outcomes of Title I schoolwide programs since IASA and (b) provide assistance to schools, districts, and states in their efforts to demonstrate and sustain a high level of schoolwide programs that are effective in achieving student success in a variety of school settings across different geographic regions.

This paper reports some of the key findings based on an analysis of the study's Year 1 database. In the first section, we discuss the policy reform context and the current research base on Title I. Then we present the study's research design and discuss our data collection strategies. The third section highlights some of the study's findings. The concluding section includes an exploratory discussion of implications for policy development and recommendations for schools and districts engaged in, or considering, schoolwide program implementation. We hope that this report will inform and assist policymakers and practitioners in their efforts to overcome the educational challenges facing inner-city schools with large concentrations of disadvantaged students.

TITLE I REFORM AND THE CURRENT RESEARCH BASE

Legislative Development of Schoolwide Programs

The 1994 IASA sought to make systemic improvements in schools with a high concentration of students from economically and educationally disadvantaged backgrounds. For the first time in the history of federal involvement in public education, students receiving federally funded compensatory services (Title I) were no longer left at the margins of school reform. Two of the provisions in this legislation have significant implications for schooling opportunities. The first mandates that district-wide performance standards must apply to all students, including those receiving Title I services. As indicated in the Administration's proposal, Title I, bilingual education, and dozens of other federal programs must become integral to, not separate from, state and community education reforms that center on high standards (U.S. Department of Education 1993, p.3). The second provision included in this legislation promotes a schoolwide initiative in Title I schools with at least 50 percent low-income students.

The schoolwide program provision of the IASA created an unprecedented incentive for high-poverty schools to allocate Title I resources with fewer restrictions to meet the legislative expectations for academic performance as set forth in the 1994 legislation. Although Title I legislation has permitted schoolwide programs since 1978, these programs were rarely implemented before the passage of the IASA because of a requirement that school districts match federal grants with their own funds. In 1988, however, when Congress passed the Hawkins-Stafford Elementary and Secondary School Improvement Amendments to Chapter 1 (now Title I), schools in which at least 75 percent of the students come from low-income backgrounds were able to operate schoolwide programs without matching federal grants with their own school district funds. The passage of the IASA in 1994 further encouraged the adoption of schoolwide programs by lowering the eligibility threshold for schoolwide programs to schools with 50 percent low-income students beginning in the 1996-97 school year. Indeed, the number of Title I schoolwide programs has grown from fewer than 1,200 in 1991 to over 15,762 in 1997 (this figure does not include information from three states), representing an increase of 1,213 percent. Currently, almost 80 percent of the eligible schools participate in the Title I schoolwide program (Wang & Stull, in press).

Schoolwide programs are expected to reduce the historically fragmented or categorical character of Title I programs and improve the effectiveness of Title I programs and the effectiveness of entire schools rather than targeting services to meet the needs of the most disadvantaged subpopulations. In other words, schoolwide programs are designed to replace regulatory compliance with accountability for instructional coherence and organizational coordination. These expectations are also stressed in the implementation of the Comprehensive School Reform Demonstration Program in November 1997 (Public Law 105-78).

The basic programmatic and procedural requirements of the Title I schoolwide program provision of the 1994 legislation include the following:

- a comprehensive assessment of student performance in relation to state/district subject-area content and assessment standards. Measurable goals and benchmarks for meeting the goals have to be developed.
- an instructional program that is grounded in effective, research-based methods and strategies.
- high-quality professional development for teachers, aides, and other support personnel to enable all students to meet the state/district performance standards.
- development and implementation strategies to increase parental and community involvement.
- strategies to identify how resources from federal, state, local, and private sources will be used to coordinate services to support and sustain the reform program.

These legislative expectations are designed to transform Title I from its categorical and isolated character into a program that is an integral part of systemic reform. At issue is the building of a Title I research base that provides systematic information on the implementation of the legislative expectations as well as the student outcomes of schools implementing schoolwide programs.

Title I Schoolwide Programs: The Research Base Before IASA

Although the Title I schoolwide initiative is clearly at the forefront of the national agenda to improve schooling quality for children from educationally and economically disadvantaged backgrounds, the research base remains limited. An extensive review of the literature on Title I programs since the 1988 Hawkins-Stafford amendment suggests that there are only 13 major empirical studies on the implementation of Title I schoolwide programs (Wong & Meyer, 1998).

Evaluation of schoolwide programs in the initial years has shown very mixed results. On the one hand, findings suggest that, as a group, Title I students in schoolwide programs perform better than their peers in the more traditionally organized services, such as pull-out instructional settings. Nationwide evaluations, however, suggest that schoolwide programs have continued to encounter a wide range of implementation difficulties, including the need for assessment of student progress and a general lack of high-quality professional development activities. Furthermore, the database on the implementation and outcomes of Title I schoolwide projects is scanty (Wong & Wang, 1994; Wang & Wong, 1997; Wong & Meyer, 1998). Clearly, there is a need for an empirical research base to address whether the 1994 legislative expectations are being realized at the school and classroom levels.

The schoolwide program provision of the IASA was enacted with the legislative expectation that Title I resources will be used for *all* students, each of whom will be held to the same high academic standards. The legislation also includes the expectation that students served by schools with schoolwide programs will demonstrate achievement that is either higher than levels before implementation of the schoolwide program or higher than that of comparable schools in the same district. Because the legislation is nonprescriptive, describing only general expectations, schoolwide programs have been implemented in a variety of ways incorporating a range of components (Schenck & Beckstrom, 1993).

The following are highlights of what we have learned from our review of the research base on the implementation of schoolwide programs up to the passage of the IASA in 1994.

Hiring of Additional Staff/Reduced Class Size

Title I funding at schoolwide program schools has frequently been used to hire additional staff, thereby reducing class sizes. Reduced class size was identified as a key component of schoolwide program implementation by principals in slightly more than half of schoolwide program schools during the 1991–92 school year. Schools reported that the average reduction in school class size was from 27 to 19 children. The addition of new staff has not been limited to teachers. For example, counselors, social workers, school-family coordinators, and schoolwide program coordinators have also been hired as a part of schoolwide program services to strengthen the relationship between the school and families (Millsap, Turnbull, Moss, Brigham, Gamse, & Marks, 1993).

Staff Development

Principals reported that staff development activities had been implemented or significantly strengthened in over three fourths of schoolwide program schools. During the first years of implementation, a majority of districts reported that staff development at schoolwide program schools was more inclusive of teachers and involved more total hours than regular Title I schools. Staff development activities in schoolwide program schools have included training in reading/language arts instruction, instruction for low-achieving students, and mathematics instruction (Schenck & Beckstrom, 1993). According to principal reports, teachers at schoolwide program schools received an average of 29 hours of staff development, which is 6 hours more than that received by the average teacher at a Title I school without a schoolwide program (Schenck & Beckstrom, 1993; Millsap et al., 1993).

Shared Decision Making and Teacher Input

The schoolwide program option encourages increased teacher input in decisions affecting the school, emphasizing teacher input into decisions about assessments. Reports by principals in one major urban school district indicate that teachers have only a moderate level of input in decisions affecting their school. The majority of teachers had some level of input in decisions about assigning students and teachers to classrooms, hiring staff, and selecting materials or purchasing hardware. Teachers had the greatest input in decisions about selecting materials or purchasing hardware but had little input in decisions about teacher assignment and replacement (Winfield & Hawkins, 1993). In-depth case studies, however, suggest that a school's change to a schoolwide program tended to be accompanied by a high degree of teacher control and site-based management arrangements (Stringfield, Winfield, Millsap, Puma, Gamse, & Randall, 1994).

Distinction of Title I Services from the Regular Program

A central component of the schoolwide programs is the provision of Title I activities and services to all students in the school. One indicator of a program's inclusiveness is the extent to which Title I services cannot be distinguished from services offered to all children (e.g., one that lacks pull-out programs that serve only a subset of students). Sixty percent of schoolwide program school principals reported that their schools operated programs in which Title I services are indistinguishable from services for all children. Among those schools in which Title I services were distinguishable from the regular program, the most common distinction was the provision of additional services to educationally disadvantaged students who would have received Title I services in a traditional, targeted program. Only 12 percent of schools reported using a pull-out model (Schenck & Beckstrom, 1993). Principal reports indicate that schoolwide program schools in an unidentified major urban district transitioned toward the provision of Title I services to all children during the first years of implementation, with higher percentages of schools reallocating resources to provide instruction to all students each year (Winfield & Hawkins, 1993).

Classroom Instruction and Curricula

Perhaps the most critical components of schoolwide programs are those that have the potential to directly influence what takes place in the classroom. Schoolwide program principals report having introduced or significantly strengthened the following components related to curriculum and instruction: computer-assisted instruction (over three fourths), provision of a coordinated and integrated curriculum and supplemental instruction (two thirds), and provision of an extended school day (less than one fourth) (Schenck & Beckstrom, 1993). Schoolwide program schools have adopted a range of programs or curricula such as Reading Recovery or Success for All as part of their schoolwide programs (Millsap et al., 1992; National Association of State Coordinators of Compensatory Education, 1996).

The database on ways in which the schoolwide program option actually affects classroom instruction is scanty. Some findings have been reported from in-depth case studies analysis. For example, case studies of schoolwide programs identified a common theme of individualizing instruction to the needs of particular students (Stringfield et al., 1994). Evidence also suggest an increased capacity of schools and teachers in schoolwide programs to provide instructional services more flexibly as particular student needs arise, whereas traditional Title I pull-out programs have typically required a more formal process of student selection (Millsap et al., 1992).

Practices Associated with Effective Schools

Schoolwide programs are frequently reported to feature practices associated with effective schools. State Title I coordinators reported that 62 percent of schoolwide programs in their states incorporated features of effective schools programs in their schoolwide program design (Turnbull, B. J., Zeldin, S., & Cain, T., 1990). Title I district coordinators reported that a number of effective school components were implemented as part of schoolwide programs through activities such as needs assessment, staff development, changes in classroom instruction, and changes in school management (Millsap et al., 1992). The presence of characteristics associated with effective schools may, reciprocally, affect the successful implementation of schoolwide programs in that the factors that make good schools may also facilitate innovation and change. Case studies suggest that factors facilitating innovation included strong principal leadership and management skills; meaningful, universally agreed upon goals; a nurturing school culture; well-qualified staff; and organizational mechanisms to support school problem-solving (Stringfield et al., 1994).

RESEARCH DESIGN OF THE NATIONAL STUDY OF TITLE I SCHOOLWIDE PROGRAMS

Research Questions

The National Study of Title I Schoolwide Programs is designed to contribute to the research base on effective policy and practices for achieving student success in Title I schoolwide project schools, with a particular focus on the following questions regarding the effectiveness of Title I schoolwide programs:

- Is there a relationship between the 1994 IASA Title I legislative expectations on higher standards and better student performance?
- Are effective Title I schoolwide program schools more ready to meet these legislative expectations?
- What are the major differences between more effective and less effective Title I schoolwide program schools?
- What are the characteristic patterns of teaching and learning in classrooms of the more effective Title I schoolwide program schools?
- How can we use the database on more effective Title I schoolwide program schools to bring implementation of schoolwide programs to scale across the country?

Identification of the Study Sample

To develop a comparable pool of more effective and less effective Title I schoolwide schools, statistical methods were used that model the schools' academic performance given their population of at-risk students. Our goal was to identify Title I schoolwide program schools with comparable demographic characteristics in school districts that were interested in participating in the study across varied geographic regions (see Appendix).

School selection procedures began with each participating regional educational laboratory contacting one or more of the school districts within its region that have schools implementing Title I schoolwide programs and are interested in serving as study sites. The LSS sample, however, includes districts and schools outside of its region. Through the collaborating regional educational laboratories, the LSS received detailed information on each elementary and middle school in the district from school districts that agreed to participate in the study. The core database used to determine site selection included the school-by-school data on achievement test scores, the percent of students qualified for free and reduced-price lunch, enrollment, racial characteristics, and level of the schools.

For a given school district, more effective and less effective schools were identified by the data submitted by participating school districts with statistical modeling of the expected academic performance of the schools, controlling for the income level (data on free and reduced-price lunch). The final selection of the sample schools was determined with input from the school district and school staff. Table 1 provides a summary of the demographics of the sample schools participating in the study.

TABLE 1
Demographics and Size of Participating Schools

Labs	*Districts*	*Attendance %*	*Enrollment*	*Poverty %*	*African American %*	*Latino %*
AEL	Buckingham	75.5	2229	51.2	50.0	0.0
	Franklin	73.9	6831	28.0	14.0	0.0
	Russell	74.1	4616	41.1	1.0	0.0
LSS	Denver	93.5	57340*	73.4	21.1	51.3
	Montgomery County, MD	91.4	123770	22.5	18.8	11.6
	Philadelphia	82.5	325663	82.4	66.3	8.5
	Trenton	92.3	11870*	74.1	70.6	20.0
NCRE L	Chicago**	92.6	392812*	86.0	53.8	32.2
	Cleveland	87.5	71148*	79.5	70.6	7.5
	Detroit	92.3	181812*	65.3	90.8	
NWRE L	Tacoma*	94.7	28689*	53.6	19.6	5.1
SERVE	Atlanta	91.3	56406*	64.2	89.8	2.0

Notes: * Size from School District Data Base: NCES.
** Percents for these schools are based on elementary and middle school students only.

Instrumentation

In addition to using the demographic and achievement data routinely collected by the school/district, the study collected additional data using multiple methods, including observation of classroom practice, interviews with school staff, and surveys of school staff and parents.

Classroom Practice

Observations of classroom practices focused on instructional strategies, settings in which instruction took place, types of interactions between students and teachers, and students' learning behaviors and interactions with peers. Classroom observations were carried out during reading and math periods.

Interviews with the School Staff

The research team used open-ended questions in their interviews with principals, teachers, parent focus groups from the participating schools, and with Title I coordinators at the district level. Questions included in the interviews were designed to connect school practices in the context of the legislative expectations set forth in the Title I schoolwide provisions of the IASA. The types of questions included:

- Resource allocation: How do schools allocate federal, state, and local resources differently as a result of the schoolwide program?
- Teacher recruitment and professional development: How creative are schools in recruiting teachers? Do they engage in new kinds of professional development?
- Inclusion practices: Do schools move to eliminate pull-out practices? Or do they maintain pull-outs for different categories of students?
- Curriculum design: How do schools decide on curricular materials?

Surveys

The surveys were designed to obtain information on the level of implementation of Title I legislative expectations and school climate. The teacher and principal surveys focused on legislative expectations and school climate/governance components, whereas the parent survey focused on school climate and parent involvement. A 5-point Likert scale was used, ranging from 'strongly disagree' to 'strongly agree' responses. The scales were developed based on both rational analysis of the legislative expectations and empirical factor analysis. The mean inter-item reliabilities of the scales was 0.80.

Data Collection

During the 1997–98 academic year, researchers from the collaborating regional educational laboratories gathered data from 32 schools in 9 urban districts and 3 countywide districts. Sixteen were identified as more effective schools and 14 were identified as less effective schools. The cross-lab study team collected surveys from 593 teachers, 21 principals, 1,928 students, and 507 parents. Classroom observations were conducted on 126 teachers and 713 students. In addition, face-to-face interviews were conducted with 25 principals, 169 teachers, 10 parent focus groups, and 16 Title I district coordinators. Data collection during Year 2 was less extensive. The study collected surveys from 9 principals, 250 teachers, and 484 parents. Our research team conducted classroom observations on 105 teachers and 165 students. In addition, interviews were conducted with 6 principals, 36 teachers, and 4 parent focus groups. No interviews were conducted with Title I district coordinators during Year 2. Tables A and B in the Appendix show data collection efforts in both Years 1 and 2.

THE NATIONAL STUDY DATA RESULTS

A major focus of the National Study of Effective Title I Schoolwide Programs was on the impact of district policy and district-based curriculum and performance standards on the implementation of Title I schoolwide programs. In particular, we were interested in investigating how the district-level initiatives have affected resource allocation, professional development, curricular design, and instructional practices and curricular organization of the Title I schoolwide programs.

Our sample of Title I schoolwide programs can be classified as more effective and less effective schools, based on our statistical analysis of their student achievement while controlling for poverty factors. The schoolwide program schools in our sample were very similar in terms of socioeconomic characteristics. Small variations were observed in racial composition of the student population, teacher turnover rates, and the level of concentrated poverty, but none were statistically significant. More effective Title I schoolwide programs across the geographically dispersed study sites showed a higher mean achievement level than expected given the schools' socioeconomic characteristics. This finding suggests a greater capacity of the more effective schoolwide program schools to achieve student success in spite of the odds.

The following is a summary of the strengths and challenges in schoolwide program implementation observed by the National Study of Effective Schoolwide Programs. In this section we will focus on policies and practices that tend to contribute to positive outcomes.

District Policy Shifts from Compliance-Oriented to Standards-Based Accountability

Title I schoolwide programs no longer simply follow a compliance model that has traditionally been driven by complex federal regulations. Instead, schoolwide programs are more integrated with the district-wide vision of educational accountability. Regardless of their regional location, income, and racial characteristics, the sampled schools are all affected by accountability standards established by the district and the state. Schoolwide programs are no longer at the margin of system-wide reform. The emphasis on standards-based accountability is clearly reinforced by districtwide policy initiatives. Many districts' reform agendas include creating a general climate of accountability and provide guidelines and standards for resource allocation and professional development. Notably, districts that take advantage of schoolwide programming are also likely to support school-level flexibility in combining federal and local/state revenues. For example:

- Chicago used probation and reconstitution policies to enforce accountability for improvement by low-performing schools. The two less effective schools in the Chicago study sample were placed on probation.

- In Atlanta, one less effective school was reconstituted with new staff and a new principal.
- Tacoma, Trenton, and Chicago implemented student promotion and retention policies.

Some Title I Schoolwide Schools Show Higher Performance

More effective and less effective Title I schoolwide program schools are significantly different in their student performance. When the schools' poverty characteristics are taken into consideration, effective schoolwide programs consistently perform better than the less effective schools. More important, effective schoolwide programs perform above the district average when poverty indicators are controlled for, as Table 2 suggests. These promising results indicate the need for the policy community to learn more systematically about what works in the more effective schools and, in turn, disseminate effective strategies widely to scale up educational improvement.

More Effective Schools Are More Likely to Meet IASA Legislative Expectations

When compared to their less effective counterparts, the more effective schools are more likely to meet a wide range of IASA legislative expecta-

TABLE 2
School and Student Characteristics of More Effective and Less Effective Schools

	Less Effective		*More Effective*	
Characteristics	*Mean*	*SD*	*Mean*	*SD*
Students				
Average attendance	92.73	2.27	91.04	5.12
%African American	62.86	39.94	47.42	39.81
%Latino	23.90	33.76	33.70	37.31
%Free/reduced lunch	87.05	10.42	82.55	14.59
Schools				
Enrollment	552.00	145.24	536.00	213.15

tions. Table 3 shows the means and standard deviations with the results of Anovas for the Year 1 teacher survey scales on Title I schoolwide legislative expectations and school climate/governance.

As shown in Table 3, teachers rated all of the implementation component and school climate scales above the mean (range 1 to 5; mean 3). Highest rated are instructional strategies with cooperative learning emphasis and student/teacher relationships. Lowest rated are resource allocation and availability and school problems. The results suggest that more effec-

TABLE 3
The Level of Legislative Expectations Implementation and School Climate/Governance: Comparison of More Effective Schools and Less Effective Schools Teacher Surveys in Year 1

	Less Effective N=243		*More Effective N=350*		*Anova*
	Mean	*SD*	*Mean*	*SD*	*F*
Legislative expectations					
Student performance goals	3.79	.57	4.01	.54	21.04***
Standards/assessment	3.66	.79	3.88	.70	12.16***
Evaluation	4.02	.60	4.16	.53	8.50**
Enriched curriculum	3.58	.67	3.84	.69	18.70***
Student centered instruction	3.86	.63	4.05	.56	12.82***
Cooperative learning instruction	4.12	.57	4.21	.57	3.54
Professional development	3.76	.71	3.91	.72	6.23*
Resources	3.22	.63	3.35	.60	6.06*
Accountability	3.64	.58	3.76	.54	6.96**
Parent involvement	3.76	.57	3.87	.57	4.70*
School climate/governance					
Teacher/student relationships	4.15	.55	4.32	.52	14.31***
Colleague relationships	3.88	.74	4.08	.60	12.25***
Shared decision making	3.11	.97	3.12	.97	0.04
Principal leadership	3.68	.91	3.93	.81	11.67***
Low school problems	3.05	.52	3.27	.49	24.44***
Student attitude	3.73	.66	3.95	.62	15.43***

Notes: $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .0001$

tive compared to less effective schoolwide programs show stronger components in their implementation of student performance goals, academic standards and assessments, enriched curriculum, student-centered instruction, evaluation, availability and usefulness of professional development, resource allocation and availability, accountability, and parent involvement. Also, teachers from more effective schools rate teacher-student relationships, colleague relationships, principal leadership, low school problems, and student attitudes toward schooling significantly higher than do teachers from less effective schools. The two groups do not differ statistically significantly in cooperative learning strategies and shared decision-making components. These results indicate that more effective schools are implementing the IASA legislative expectations at a higher level and also have more positive school climate/governance than are less effective schools.

Table 4 provides a summary of the differences between means for more effective and less effective schools on the teacher survey scales in Years 1 and 2, along with the mean scale differences for both years. The table shows that the largest differences between the types of schools according to teacher responses over the two years are on the scales student attitudes, school problems, teacher–student relationships, and student performance goals. The smallest differences between the two types of schools appear on the scales shared decision making, principal leadership, and accountability.

Table 5 shows the means and standard deviations with the results of Anovas for the teacher survey scales on Title I schoolwide legislative expectations and school climate/governance for the Year 2 teacher survey data. As summarized in Table 5, teachers rated all the implementation and school climate scales above the mean (range 1 to 5; mean 3). The highest rated scales and the lowest rated scales for the 1999 survey are consistent with the 1998 survey. Highest rated are teacher–student relationships and instructional strategies with cooperative learning emphasis. Lowest rated are shared decision making and school problems. The results suggest that more effective compared with less effective schoolwide programs show stronger components in their implementation of student performance goals, evaluation, and student-centered instruction. Also, teachers from more effective schools rate teacher-student relationships, colleague relationships, low school problems, and student attitudes toward schooling significantly higher than teachers from less effective schools. The two groups do not differ statistically significantly in academic standards and assessment, enriched curriculum, cooperative learning instruction, availability and usefulness of professional development, resource allocation, accountability, parent involvement, shared decision making, and principal leadership. These results indicate—although somewhat less strongly than 1998 results—that more effective schools are implementing the IASA legislative

TABLE 4
Year 1 and Year 2 Teacher Survey Scale Mean Differences

	Year 1 Difference	*Year 2 Difference*	*Mean Difference*
Legislative Expectations			
Student performance goals	0.24	0.19	0.22
Assessment	0.23	0.17	0.20
Evaluation	0.18	0.19	0.19
Enriched curriculum	0.27	0.15	0.21
Student-centered instruction	0.16	0.26	0.21
Cooperative learning instruction	0.12	0.13	0.13
Professional development	0.19	0.15	0.17
Resources	0.09	0.10	0.10
Accountability	0.13	0.01	0.07
Parent involvement	0.10	0.11	0.11
School climate/governance			
Teacher/student relationships	0.20	0.25	0.23
Colleague relationships	0.25	0.16	0.21
Shared decision making	0.04	-0.04	0.00
Principal leadership	0.22	-0.13	0.05
School problems	0.20	0.39	0.30
Student attitudes	0.25	0.41	0.33

expectations at a higher level and also have more positive school climate/ governance than less effective schools.

Teacher reports support the finding that the more effective Title I schools participating in this study chose to actively evaluate student performance rather than passively conform to less stringent standards. In support of the emphasis on accountability, one Virginia teacher reported that "...the Title I evaluation has to do with those test scores...We have to show that we are accountable." Another teacher kept "running records" as an effort to document her teaching and student performance.

Teachers also pointed out that the district has been supportive of them in meeting the legislative expectations. Examples are seen in three areas: professional development, technical support, and academic initiatives. One teacher reported that the district provided a variety of opportunities for professional development including a "...computer course... a course for the gifted and talented... and a monthly multicultural meeting." The same teacher commented that aside from "...a pretty ambitious staff development program..." the district provides "ample" technical support. Men-

TABLE 5
Level of Implementation of Legislative Expectations and School Climate/Governance, Teacher Surveys, Year 2

	Less Effective (N=96)		*More Effective (N=148)*		*Anova*
	Mean	*SD*	*Mean*	*SD*	*F*
Legislative expectations					
Student performance goals	3.85	.57	4.04	.62	5.43*
Standards/assessment	3.80	.72	3.97	.66	3.34
Evaluation	4.03	.57	4.22	.51	7.15**
Enriched curriculum	3.69	.65	3.84	.66	2.87
Student-centered instruction	3.87	.57	4.13	.56	11.73***
Cooperative learning instruction	4.09	.62	4.22	.56	2.88
Professional development	3.76	.75	3.91	.72	2.10
Resources	3.32	.69	3.42	.62	1.21
Accountability	3.79	.52	3.80	.58	0.01
Parent involvement	3.75	.55	3.86	.60	2.12
School climate/governance					
Teacher/student relationships	4.12	.45	4.37	.49	15.36***
Colleague relationships	4.02	.65	4.18	.52	3.89*
Shared decision-making	3.30	.97	3.26	.96	0.06
Principal leadership	4.04	.79	3.91	.83	1.43
School problems	3.07	.52	3.46	.46	33.81***
Student attitudes	3.67	.68	4.08	.56	25.24***

Notes: *p < .05 **p < .01 ***p < .001

tion was also made of "...the staff initiatives that come from the central office ... addressing reading and reading rubric development and writing."

Furthermore, our field-based research provides concrete examples of how districts and schools focused on raising academic performance. These include:

- Philadelphia's *Children Achieving* reforms created a cluster-based Teaching and Learning Network that used equity coordinator positions and customized professional development and technical support services for teachers and principals. The initiative is comprehensive in scope, ranging from setting new high standards for students so they can compete in the global economy to creating the additional time teachers need to prepare students to meet the standards.

- Chicago developed the *Chicago Academic Standards* and *Curriculum Framework Statements* that define "what students should know and be able to do" in four core curriculum areas: language arts, mathematics, science, and social science. All students, including special needs students and those with limited English proficiency, are expected to meet these standards. Teachers are expected to adjust instructional materials to meet the needs of all their students.

Accountability and Effectiveness: The Teachers' Perspective

Teachers in the more effective schoolwide programs, when compared to their peers in the less effective settings, tend to have a sharper focus on academic accountability and agree that there has been an increase in practices associated with holding students and schools accountable for their performance. Teachers in the more effective schools consistently showed a stronger degree of agreement with each other about accountability issues in their schools. For example, 42% of the teachers in the 17 more effective schools (versus 32% in the 16 less effective schools) agreed or strongly agreed that there had been an increase in students' standardized test scores since the school adopted a schoolwide program.

In response to the Montgomery County Public School's *Success for Every Student* (SES) initiatives, teachers in schoolwide programs employed broad system-wide strategies to raise student achievement. SES specified various tasks for schools, central administrative offices, parents, and communities, to achieve four goals: (1) ensure academic success for every student, (2) provide an effective instructional program, (3) strengthen partnerships for education, and (4) create a "self-renewing" organization. The latter is defined as a school that exhibits a positive work climate in which staff effectiveness and creativity are encouraged, respected, valued, and supported to promote productivity and ownership for student success. Such schools provide an instructional program that includes efficient and effective support and staff development.

Teachers and Parents at More Effective Schools Enjoy a Positive School Climate

Teachers from more effective schools rate student attitudes toward schooling, teacher-student relationships, colleague relationships, low school problems, and principal leadership significantly higher than teachers from less effective schools. In addition, parents whose children attend more effective schools rated teacher/student relationships, parent involvement, student efficacy, student performance goals, and parent satisfaction higher than parents whose children attend less effective schools. For example:

- Philadelphia's *Small Learning Communities* restructured large schools into smaller subgroups in an effort to ensure students, teachers, and parents become part of a small, more closely-knit community. The Small Learning Communities, which serve between 200 and 500 students, group students heterogeneously rather than according to ability level. All students are expected to meet rigorous standards. The communities often are formed around a particular theme, such as cultural diversity.
- Tacoma's teachers and learning specialists worked together to create *Individual Acceleration Plans* to address the individual needs of low achieving students. Parents are invited to join teachers in the evaluations, which take place at school three times a year.

POLICY IMPLICATIONS AND RECOMMENDATIONS

The current climate of educational reform in the United States stems in part from growing public concern over the general quality of schooling. There is increasing attention to ensure school accountability for effective instruction and productive learning of all students, particularly those who live in circumstances that place them at risk of educational failure or of leaving school unprepared for work or further learning. *Findings on the implementation of schoolwide programs suggest that Title I can be a part of national efforts toward systemic improvement.*

Several districts in this study have developed aspects of what we call an academic accountability framework. These aspects of accountability include: defining academic standards that apply to all schools, including Title I schoolwide programs; creating district-wide tests that may be used to determine whether students are promoted; and raising expectations on the school's capacity to improve performance.

Clearly, district-directed standards are likely to have important implications for inner-city schools with large concentrations of disadvantaged students. But district-initiated pressure is not likely to improve student performance in low-performing schools if the district does not provide additional resources and professional support. As urban districts raise the accountability standards, there is clearly a need to maintain an infrastructure of support for schoolwide programs.

Improve Accountability at the District and School Level

Strengthen the Accountability Functions of the District

Title I program services also need to be aligned with the state and district content standards to ensure accountability for meeting achievement standards by students in Title I programs. The schoolwide program design offers a built-in organizational mechanism through which the Title I legislative expectations can be linked with the ongoing standards-based reform efforts of the school, school district, and state. Furthermore, schoolwide program schools and districts can use the implementation of schoolwide programs and the associated accountability requirements as an opportunity to expand the ways in which evaluation and assessment are used for the entire school. Simultaneously, schoolwide programs also create a context in which the roles of principals and district staff can be reevaluated.

Establish a District-wide Assessment-centered Evaluation and Monitoring Framework

Districts can improve the accountability of Title I schoolwide programs by establishing clear guidance and support for measuring, analyzing, and reporting student performance. By using a district-wide assessment framework based on the district policy on an annual or semiannual basis, the district will be able to establish the infrastructure required to sustain the impact of the schoolwide approach to improvement. Educators and policymakers at all levels need to work together to raise the schoolwide student outcome expectations of schoolwide programs. To this end, districts can design and implement strategic plans aimed at narrowing the with-in school learning gap among varying racial, ethnic, and income groups. In this regard, school district and state-level monitoring of Title I implementation and outcomes needs to focus on establishing databases on student performance variation both within schools and across schools within the district and state.

Encourage Implementation of Whole School Reform

Build a Knowledge Base on Procedural Knowledge

District and school professionals need to collaborate on building a procedural knowledge base on ways to achieve a high degree of program implementation of Title I schoolwide programs in varied settings across the district and state. This lack of information has contributed to the lack of implementation to date. Procedural knowledge development is a central research and development task necessary for achieving wide-scale application of comprehensive whole-school reform, especially those for whom the current system of delivery has not been effective.

Create Incentives for Schoolwide Programs to Adopt Comprehensive Reform Models

Only 1 of the 16 less effective schools adopted a comprehensive reform model. Most of the Title I schoolwide schools in our sample continue to engage in particular aspects of curriculum reform rather than in developing a whole school improvement strategy. The teachers' views on these matters clearly suggest a need for more training in accountability, assessment, and instructional strategies as well as greater efforts to facilitate whole school reform in Title I schoolwide schools. In addition, there remains a tendency toward programmatic fragmentation at some schools, evidenced by the lack of collaboration and communication among classroom teachers and additional staff (e.g., Title I coordinators, basic skill teachers, and instructional staff). Without proper scheduling and collaboration, the presence of additional staff could cause confusion between teachers and students. Also, lack of staff stability was found to be a barrier to effective program implementation.

Sharpen the Focus on Teacher Development

Improve the Quality of Teaching

Schools in this study recognize and emphasize the importance of professional development, and many teachers discuss positive experiences in their professional development. But there appears to be a great deal of unevenness in the content, opportunity, and delivery of professional development among schoolwide programs. Schools lack funds to improve program planning and evaluation. Teachers and principals are concerned about frequent changes, which cause discrepancy between professional development plan and delivery. In short, the quality of teaching needs to be a central focus in schoolwide improvement.

Create Incentives for Schoolwide Programs to Select Professional Development that Meets Their Particular Needs

Forging the linkage between research-based knowledge and school practices is an integral part of comprehensive school reform. Strategic partnerships between schoolwide schools and research and development organizations (e.g., universities and regional educational laboratories) should be explored and nurtured in a systematic manner. The opportunity to redefine decision-making roles at the school level can facilitate the creation of more inclusive and efficient infrastructures of support to better serve the needs of the schools' increasingly diverse student population.

Broaden Parental Engagement in Schoolwide Programs

Increase Efforts to Engage Parents

Interviews with principals and teachers and the focus group interviews with parents suggest that schools generally recognize the importance of parental involvement. Schools are making serious efforts to encourage parents to participate in school activities such as workshops, *PTA* meetings, and family entertainment nights. Yet parents' attendance rates at these events are relatively low. Many schools have not been able to mobilize parents to support student learning activities, such as homework assistance and other literacy projects. In particular, schools need to develop strategies to encourage Limited English Proficient (LEP) parents to get involved in school activities more often and to feel comfortable visiting their children's school.

Findings from analysis of 507 parent surveys from 10 of the sampled schools in Year 1 show that parents who are bilingual or speaking a different language at home were much less satisfied with student performance goals, parent involvement, teacher-student relationships, principal leadership, school problems, and satisfaction toward school than were their native English speaking peers. This was particularly the case with nonnative English-speaking parents from less effective schools, who tended to be most dissatisfied with the school climate (see Table 6). Interviews with nonnative English-speaking parents and English-speaking parents from one of the Tacoma schools support these findings. In that school, over 32% of the students come from non-English speaking homes. This school is located in a neighborhood with many South Asian immigrants; Cambodian (Hmong), Vietnamese, Spanish, and Russian are the predominant languages across the district after English. Parent conferences and cultural activities are set both at the school and in the neighborhood as outreach opportunities for the Asian community. Yet even with these efforts to create cultural inclusiveness, there were marked differences in satisfaction on the part of immigrant and nonimmigrant parents. While English-speaking parents cited numerous occasions in which they had been involved in decision making and social events at school, the Asian and Hispanic parents did not report having been involved in any way beyond participating in teacher-parent conferences and receiving letters from the school (some translated into the native language). Our findings also indicate that parents were not well aware of their roles in Title I schoolwide program decision making. For example, researchers visited schools in Trenton during two parent computer workshops. The attendance rate was extremely low and the workshops were not tied into student learning.

It is possible that parents from different cultural backgrounds have higher expectations toward school and, in turn, are more likely to become frustrated when their expectations are not met. They may also be less ready to get involved in school activities in part because of language and cultural barriers. These findings indicate that schools with LEP parents should develop strategies to encourage parents to get involved in school activities more often and to feel comfortable visiting school.

The challenge to involve parents of LEP students is clearly an ongoing process. Implementation of parental engagement efforts should be an

TABLE 6
Parents' View in Year 1: The Level of Legislative Expectations Implementation and School Climate/Governance Between More Effective Schools and Less Effective Schools

		Less Effective N=191		*More Effective N=316*		*F Statistics*		
	Language	*Mean*	*SD*	*Mean*	*SD*	*E*	*L*	*I*
Legislative expectations								
Student performance	Foreign	3.87	.80	3.83	.59	.06	9.85**	1.77
	English	4.03	.58	4.13	.51			
Resources	Foreign	3.35	1.06	2.94	1.02	3.04	.13	1.55
	English	3.20	1.12	3.13	1.15			
Parent involvement	Foreign	3.83	.79	3.83	.52	.01	6.39*	.37
	English	4.00	.79	4.04	.53			
School climate/governance								
T/S relationships	Foreign	3.89	1.00	4.12	.65	2.83	5.17*	1.27
	English	4.16	.64	4.20	.58			
Principal leadership	Foreign	3.45	.96	3.74	.79	7.34**	11.46**	.11
	English	3.72	.76	4.01	.67			
School problems	Foreign	2.99	1.08	3.02	1.01	3.83	10.86**	2.83
	English	3.18	.94	3.50	.64			
Student attitudes	Foreign	3.93	.75	4.07	.54	4.06*	.66	.59
	English	4.01	.55	4.08	.46			
Student activities	Foreign	3.59	.93	3.70	.61	1.59	3.06	.83
	English	3.80	.71	3.80	.74			
Satisfaction	Foreign	3.74	.86	3.86	.66	2.41	6.32*	.33

Notes: E = English speaking parents; L = non English-speaking parents; I = interaction effects of the two types of parents. *p < .05, ** p < .01, ***p < .0001

integral part of whole-school reform, building on the diverse resources and expertise of families and the community in forging working partnerships in the service of student success.

Table 7 provides a summary of the differences between means for more effective and less effective schools on the parent survey scales in Years 1 and 2, along with the mean scale differences for both years. The table shows that the largest differences between the types of schools according to parent responses over the two years are on the following scales: school problems, student attitudes, and efficacy. The smallest differences between the two types of schools appear on the scales of resources and student activities.

TABLE 7
Year 1 and Year 2 Parent Survey Scale Mean Differences

	Year 1 difference	*Year 2 difference*	*Mean difference*
Legislative expectations			
Student performance goals	0.11	0.11	0.11
Resources	0.18	-0.12	0.03
Parent involvement	0.07	0.16	0.12
School climate/governance			
Teacher/student relationships	0.07	0.15	0.11
Principal leadership	0.25	0.03	0.14
School problems	0.22	0.29	0.26
Student attitudes/efficacy	0.10	0.27	0.19
Student activities	0.07	0.05	0.06
Parent satisfaction	0.15	0.12	0.14

Our statistical analysis of parent survey data further supports the finding that the more effective schools are more likely to adopt the IASA legislative expectations. Table 8 shows the means and standard deviations with the results of Anovas for the parent survey scales on Title I schoolwide legisla-

TABLE 8
Level of Implementation of Legislative Expectations and School Climate/Governance, Parent Surveys, Year 2

	Less Effective (N=164)		*More Effective (N=346)*		*Anova F*
	Mean	*SD*	*Mean*	*SD*	
Legislative expectations					
Student performance goals	4.02	.52	4.13	.63	3.40
Resources	3.41	1.09	3.29	1.13	1.10
Parent involvement	3.88	.55	4.04	.63	7.28**
School climate/governance					
Teacher/student relationships	4.04	.62	4.19	.65	6.01*
Principal leadership	4.00	.66	4.03	.80	.14
School problems	3.11	.78	3.40	.73	15.07***
Student attitudes/efficacy	3.86	.57	4.13	.54	26.45***
Student activities	3.91	.59	3.96	.73	.44
Parent satisfaction	3.95	.64	4.07	.69	3.03

Notes: *$p < .05$ **$p < .01$ ***$p < .001$

tive expectations and school climate/governance. As summarized in Table 8, parents rated all the implementation and school climate scales above the mean (range 1 to 5; mean 3). Highest rated are teacher/student relationships and student performance goals. Lowest rated are school problems and resources. The results suggest that more effective compared to less effective schoolwide programs show stronger components in their implementation of parent involvement. Also, parents from more effective schools rate teacher–student relationships, school problems, and student attitudes/efficacy significantly higher than parents from less effective schools. The two groups do not differ statistically significantly in student performance goals, resources, principal leadership, student activities, student attitudes, and parent satisfaction. These results suggest that more effective schools are implementing the IASA legislative expectations at a higher level and also have more positive school climate/governance than less effective schools.

CONCLUSION

The findings presented in this report are based on an analysis of the study's 2-year database. Since this is a three-year collaborative project among five regional educational laboratories, data collection is ongoing. In future reports, we will address additional policy issues, including:

- Do effective Title I schoolwide schools receive more resources than their less effective counterparts? If not, how do they use their resources differently?
- To what extent is there within-school variation in student performance among different racial, ethnic, and income groups?
- Do magnet schoolwide programs maintain academic differentiation?
- How do teachers make use of student assessment to improve instructional practice (rather than test preparation)?
- What are the strategies that have been found to be effective in sustaining schoolwide intervention over time, and how can we use this knowledge to help schools bring their schoolwide programs up to scale?

Clearly, the IASA legislative expectations—*high standards for all children and the flexibility to achieve them*—are bold and innovative. But to ensure that schoolwide programs in high-poverty neighborhoods have the capacity to meet these legislative goals, it is vital that an infrastructure of federal support and federal assessment of student performance be developed. The federal role is evolving from that of a watchdog—primarily focused on regulatory compliance—to one of a more active, supportive partner—providing funding and technical assistance for professional development and moving toward a vision of monitoring that helps schools and districts identify their needs, exchange information about effective practices, and identify strategies for improvement.

Our 2-year findings in this project support the call for closer links between the federal government and school districts in helping schoolwide programs develop coherent instructional strategies. These federal initiatives constitute what we call "procedural accountability" in Title I schoolwide policy. Our notion of procedural accountability is grounded in the concept of procedural knowledge—the knowledge base developed from research and practice about what it takes to successfully implement the legislative expectations of the Title I program. Procedural accountability is a useful way to measure the extent to which this knowledge is used effectively to meet the legislative expectations of Title I program. This cross-site study of schoolwide programs will contribute to the further development of procedural accountability in Title I schools.

APPENDIX

RESEARCH DESIGN AND COORDINATION OF DATA COLLECTION

To bridge the critical gap between research and policy, the Mid-Atlantic Regional Laboratory for Student Success at Temple University (LSS) initiated a collaborative study on Title I schoolwide programs with four regional laboratories in the summer of 1996. The collaborating labs include Appalachia Educational Laboratory (AEL), North Central Regional Educational Laboratory (NCREL), Northwest Regional Educational Laboratory (NWREL), and Southeastern Regional Vision for Education (SERVE). This research project is based on a program of study initiated at the National Center on Education in the Inner Cities (see Wong & Wang, 1994; Wang & Wong, 1997). The cross-lab collaboration has two major goals: (a) to develop a national database on the implementation and outcomes of Title I schoolwide programs, and (b) to provide assistance to schools, districts, and states in an effort to demonstrate and maintain a high degree of implementation of schoolwide programs that are effective in achieving student success in a variety of school settings across different geographic regions.

This study examines several policy questions regarding the effectiveness of Title I schoolwide programs. First, is there a relationship between the 1994 Improving America's Schools Act (IASA) Title I legislative expectations on higher standards and better student performance? Are effective schools more ready to meet these legislative expectations? How do better performing schoolwide programs differ from their lower performing peers? What kinds of instructional strategies are used in better performing schools? Finally, can we develop a procedural knowledge base on "what works" regarding Title I schoolwide programs? Our efforts to address these issues will have broad policy implications on the current reauthorization of Title I as well as on the ongoing discussion on comprehensive school reform.

1. Legislative Expectations Form the Basis of Survey and Interview Instruments

A major focus of this study is to examine the level of implementation of Title I schoolwide legislative expectations as established in the 1994 IASA. These legislative expectations are outlined in a booklet entitled *An Overview of Title I Schoolwide Programs: Federal Legislative Expectations* (Wong and Meyer 1998), produced by the Laboratory for Student Success (LSS). Drawing on the key components of the schoolwide initiative as laid out in earlier drafts of the booklet, staff at the LSS developed specific measures in various areas, including schoolwide vision, organizational climate, instructional strategies, and curriculum standards.

To measure the level of Title I legislative expectations as implemented in the study sites, LSS staff created the following scaled indicators in both the teacher and parent survey instruments: student performance goals (13 items), standards/assessment (4 items), student evaluation (5 items), enriched curriculum (6 items), student-centered instruction (5 items), cooperative learning instruction (4 items), professional development (6 items), level and use of resources (8 items), accountability (6 items), and parent involvement (10 items). The overall school climate and school governance were measured with scales of the following indicators: teacher/student relationships (4 items), colleague relationships (5 items), shared decision making (3 items), principal leadership (5 items), scope of problems in school (13 items), student activities (4 items), student attitudes (6 items), and parent satisfaction toward schools (7 items). Item details will be included in the finding later.

It should be noted that the focus and length of the teacher and parent questionnaires were somewhat different to reflect respondents' role and perspective on the schoolwide program. Whereas parent questionnaires focused on school climate and parental involvement, teacher questionnaires included not only these issues but also school governance. All the questionnaires included the 5 Likert Scale with "strongly disagree" to "strongly agree" responses. Scales were developed with the basis of both conceptual frameworks and empirical factor analysis. The mean of inter-item reliabilities of the scales was 0.80.

Classroom practices were measured with the observation instrument for teachers and students during reading and math periods. The focus was on instructional strategies, instructional settings, types of interactions between students and teachers, and students' on-task behavior. The instructional setting for students is differentiated in terms of whole class, small class, and individual setting. Instructional setting for teachers is differentiated by whole class, small class, teacher's desk, student's desk, and traveling. Interaction style for students included categories of no interaction, interaction with teachers, and interaction with others. Interaction style for teachers included categories of no interaction, interaction with instructional purposes, and interaction with managerial purposes for teachers. Percentage of occurrences of each of these categories of interaction during 10 intervals within each class was separately calculated.

The research team also used open-ended questionnaires in their interviews with principals, teachers, and Title I coordinators at the district level. Questions were designed to connect school practices in the context of the systemic agenda as set forth in the IASA. The types of questions asked included the following: (1) Resource allocation: How do schools allocate federal, state, and local resources differently as a result of a schoolwide program? (2) Teacher recruitment and professional development: How creative are schools in recruiting teachers? Do they engage in new kinds of professional development? (3) Inclusion practices: Do schools move to eliminate pull-out practices? Or do they maintain pull-outs for different categories of students? (4) Curriculum design: How do schools decide on curricular materials? Interviews were transcribed and then analyzed by using Nu*dist to determine the relevance of the legislative expectations in school practices. Analysis of the interviews will be presented later.

2. Selection of Schoolwide Schools with Varying Performance but Comparable SES Characteristics

To develop a comparable pool of higher and lower performing Title I schoolwide schools, we employed statistical methods that model the schools' academic performance given their at-risk student populations. We sought to identify schoolwide programs that vary in their performance but have similar socioeconomic characteristics. Our school selection procedures began with each participating laboratory contacting one or more of the school districts within its region for research access. From each school district (via the lab), the LSS received detailed information on every elementary and middle schools in the entire district. The core data base that LSS used to determined site selection included the school-by-school data on achievement test scores, the percent of students qualified for free and reduced price lunch, enrollment, racial characteristics, and level of the schools. It should be noted that districts used different tests, and the information they provided varied from 2 to 7 years. More specifically, the following tests were used: Iowa Test of Basic Skills in Atlanta, Chicago, and Denver; California Achievement Test in Cleveland; Michigan Assessment Test in Detroit; Texas Assessment of Basic Skills in Houston; New Jersey Early Warning Test in Trenton; Philadelphia Comprehensive Test of Basic Skills in Philadelphia; and Virginia School Assessment Program in all Virginia's school districts.

3. Coordination of Data Collection

During the 1997–98 academic year, lab researchers gathered data from 32 schools in 9 urban districts and 3 countywide districts. To identify "what works," we created two samples of schools based on our statistical modeling of their expected academic performance given their income characteristics. All together, the cross-lab study team collected surveys from 593 teachers, 21 principals, 1,928 students, and 507 parents. Interviews were conducted with 25 principals, 169 teacher, 10 parent focus groups, and 16 Title I district coordinators.

Each participating laboratory was responsible for obtaining permission to conduct research in its selected district(s). Reports and other policy documents on Title I were collected from each participating district. Schools were then selected based on regression analysis of their student achievement and socioeconomic characteristics as mentioned above. Each laboratory then made contact with the sample of schools and worked out the site visit schedule. Lab researchers visited the study sites to explain the purpose of the project to the principal and teachers and to finalize the data collection plan. At each participating school, researchers administered teacher and principal questionnaires during a faculty meeting, with the exception of a few schools in which teachers completed the questionnaires individually and returned them by mail to the researchers or the laboratory. Parent questionnaires were completed at home. Trained researchers, using the observation instrument developed by the LSS at Temple University, conducted observation for reading and math classes. One or more researchers from each collaborating laboratory received observation training from the LSS to make sure that there was consistency in conducting classroom observation among the lab researchers. Before researchers conducted their classroom observation, they requested a list of teachers and students from the study sites. Using this information, lab researchers randomly selected six students in each classroom for focused observation in terms of teacher-student interaction. Each observation lasted for about 45 minutes:

5 minutes total for a teacher (10 intervals for 5 seconds each) and 3 minutes for each of the 6 students (10 intervals for 3 seconds each).

In short, this cross-lab collaboration involved many hours of planning and development. Several meetings were held to discuss and revise data collection strategies and instruments. Preliminary analyses were circulated, and participating lab researchers provided inputs. This study is not only an unprecedented effort on the part of the labs to conduct research on the effectiveness of schoolwide programs, but also a timely contribution to the national discussion on improving Title I.

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CHAPTER 9

TEACHERS' PERCEPTIONS OF TITLE I PROGRAM IMPROVEMENT AND ACCOUNTABILITY

Jerome V. D'Agostino and Ginger L. Stoker

Since the Hawkins-Stafford reauthorization of 1988, Title I schools have been held accountable for student achievement through the Program Improvement (PI) process. Criteria have been developed to gauge each school's adequate yearly progress (AYP) to determine the schools in need of improvement. Identified schools are expected to develop a Program Improvement Plan (PIP) that stipulates the actions the school will take to reform. Although not explicitly stated in Title I guidelines, an underlying logic or theory describes how Title I PI is expected to spark school personnel into action.

This chapter presents survey data from teachers in schools identified for PI to test hypotheses that were developed based on the logic of Title I accountability. The survey was administered to 140 teachers in five schools that did not make AYP and, consequently, were placed in PI. It was designed to ascertain regular-classroom teachers' perceptions of PI, their motivational levels to improve students' test scores, and several factors that potentially could account for motivation. Although there have been some attempts to assess teachers' attitudes toward PI (e.g., George, Grissom, & Just, 1996), the majority of PI evaluations have focused on the validity of the school identification process (Richardson, 1999; Tucker & Dirir, 1994), technical assistance offered to schools (Chimerine, Haslam, & Laguarda, 1994; Yap, 1986), and the nature of schools' efforts to be removed from PI status (George et al, 1996; Kirby, Berends, Naftel, & Sloan, 2000). Thus, most PI evaluations have focused on identifying and describing the behaviors and activities of key PI stakeholders rather than their affective and cognitive processes. Upon critical analysis of the theory for which PI is founded, however, it became evident that it is important to examine the latter phenomena. Without teacher commitment, involvement, "buy-in," and effort to improve, there is little chance that PI will facilitate authentic school reform.

TITLE I PROGRAM EVALUATION

Title I of the Elementary and Secondary Education Act (ESEA) of 1965 required school districts that received program funds to test participating students at least annually to evaluate the effectiveness of the programs. The evaluation requirements were added to the law to ensure that schools would be accountable to parents. By 1974, it became evident that the results of various tests used by school districts were not comparable. The reauthorization of that year created a more uniform testing system and required districts to employ one of three evaluation designs: a control-group comparison study, a regression discontinuity study, or a norm-referenced achievement gain model based on norm-curve equivalents (NCEs) to determine AYP. The evaluation system was more fully implemented because of the Title I Evaluation and Reporting System (TIERS), which was an outgrowth of the 1979 reauthorization. Due to the difficulty of conducting the comparison-group and regression-discontinuity designs, the NCE model became the design of choice. Title I evaluation based on NCE scores from conventional standardized achievement tests remained in effect until the mid-1990s.

The function of testing was broadened in 1974. Schools were encouraged to use their test results to improve their programs. This use of testing was established more firmly in the 1988 Hawkins-Stafford amendments, which required participating schools that did not demonstrate AYP to develop a PIP. According to the logic of the equipercentile assumption, schools were placed in PI if their students, on average, had a yearly gain of less than 0.

Perhaps the most significant Title I testing changes occurred in 1994 with the passing of the Improving America's Schools Act (IASA), which required states to either develop or implement standards-based assessments. These tests, which had to be administered in at least one grade in Grades 3–5, 6–9, and 10–12, were to reflect state standards in at least mathematics and reading and had to yield scores that indicated at least three levels of student performance: partially proficient, proficient, and advanced.

To identify schools in need of improvement, states were required to create AYP indicators based on their performance levels. If schools identified for improvement did not make AYP for three years, states and districts were expected to take corrective actions. States were responsible for deciding which corrective actions to take; however, the federal guidelines offered suggested actions, such as:

- staff reconstitution,
- implementation of a new research-based curriculum,
- implementation of a comprehensive school reform model,
- withholding of school funding,
- specifying for a school how its funds will be allocated,
- reduction of school-level decision making,
- alteration of the school's governance structure such as changing the school into a public charter school, and
- authorization for students to transfer out of the school.

The more severe measures among these alternatives were not allowed, however, until assessment systems were in place. Federal guidelines were not all punitive. According to the guidelines, states were to provide technical assistance to schools identified for PI through state support teams.

Title I accountability changes occurred because of growing concern that previous Chapter 1 AYP guidelines, based on conventional achievement tests and the equipercentile assumption, encouraged schools to (a) emphasize basic skill learning for Title I students and (b) set rather low goals for program success. Under the guidelines, a school with an average pretest score of 15 NCE units would make AYP if the average posttest score remained 15 or increased to 16. Critics of this system pointed out that schools were being encouraged to create lower expectations for disadvantaged students and to adopt a belief that economically deprived children were not capable of learning more complex skills.

STATE PLANS FOR TITLE I TESTING AND PROGRAM IMPROVEMENT

The IASA legislation required all states by 2000 to develop more rigorous AYP measures than the NCE equipercentile system. By 1997, all states had developed transitional yearly progress indicators that were more stringent than previous Chapter 1 accountability systems. Presently, the U.S. Department of Education (USDE) is reviewing and approving states' final accountability plans.

To allow schools adequate time to create their new testing and AYP systems, the IASA testing policies have only recently been enforced. Currently, the USDE is collecting and reviewing states' assessment and AYP plans. A majority of the states have elected to construct their own standards-based assessments. The stringency of transitional and proposed final AYP indicators varies considerably across states (Goertz, Duffy, & Le Floch, 2001; U.S. Department of Education, 1999). Only about half the states presently require a specified proportion of students in Title I schools to reach a proficient level of performance. Among these states, the actual proportions vary. In New Mexico, 60 percent of the students in a school must be deemed proficient, whereas in Maryland the percentage is 70 percent, and in New York it is 90 percent. Other states have enacted a minimum competency requirement. For instance, in Vermont only 30 percent of a school's students can perform at the lowest level. Some states have not specified proportions of students that must perform at certain performance levels, but instead have specified the proportion of students who must obtain a minimum norm-referenced score. For example, in Arkansas 50 percent of a school's students must score at the 40th percentile or greater on the Stanford-9 test.

Unless a more in-depth study is undertaken to trace the developmental processes of states' AYP indicators, it is not possible to ascertain why such diversity exists. Those states that developed more ambitious standards apparently did so based on the mission of IASA to enable all children to attain high academic standards. Other states seemingly responded to the criticism that the previous Chapter 1 AYP system conveyed dual standards by creating more rigorous indicators than the equipercentile assumption, but stopped short of expecting schools serving large proportions of disadvantaged students to ensure that all (or most) students were proficient or at grade level. It is possible that some of these latter states set lower AYP standards until their standards-based assessments and performance levels were more established. Nonetheless, schools across the country presently are receiving different messages from their home states regarding what is expected from their students.

Ultimately, state assessment and AYP systems will be evaluated based on the degree to which these accountability mechanisms facilitate school improvement and lead to increased student academic performance. It is too early to conduct such evaluations given the stage of development of most state systems, but presently it is possible to examine the logic of Title I accountability systems. As is often the case in evaluating programs, the rationale for certain program components is not stated in program documentation, so it must be inferred. In order to draw such inferences, a causal model must be proposed that explains how program features are designed to lead to intended outcomes. These activities serve as the foundation of theory-driven evaluation (see Chen, 1999 and Weiss, 1997).

STUDY DESIGN

For this study a number of hypotheses were developed to explain how a school's PI identification gets transformed into action, given the way Title I is designed to work. The focus was centered on teachers' perceptions of PI and how these affective factors lead to motivation to act. Survey data were collected to test the following hypotheses:

1. Once teachers are informed that their school was identified for PI, they will become more motivated to improve students' test scores.
2. Teachers in schools farther from making AYP will be more motivated to improve students' test scores than teachers in schools closer to the goal.
3. Teachers will try harder if a threat for corrective action exists in schools that continue to not make AYP.
4. Teachers will commit to states' PI systems.

Teacher Survey Data

The data were obtained from five Title I elementary (Grades K–5) schools on PI during the 2000–2001 school year. The schools were located in one school district in a large Arizona city. A total of 140 teachers across the five schools were asked to complete a 72-item survey designed to measure their motivational levels to work harder to improve students' test scores and factors often found to predict motivation, such as expectancy of reaching the goal, threat of corrective action, and perceived instrumentality. Teachers completed the survey after viewing graphical displays of their third-grade students' actual and expected reading and mathematics test scores used to determine AYP.

The average enrollment among the schools was 683 students, ranging from a low of 598 to a high of 766. All schools contained predominantly Hispanic student populations. The median percentage of Hispanic students was 84 percent (ranging from 72 percent to 94 percent). White students comprised the second largest proportion of students at all schools (median = 12 percent, range: 2 percent to 20 percent), and there were about equal proportions of African and Native American students (medians = 3, 2 respectively, ranges: 1 percent-6 percent, 2 percent-3 percent respectively). There were few Asian students enrolled in the schools (median = 0 percent, range: 0 percent–1 percent).

The number of teachers at each school was 21, 26, 27, 30, and 36. Among all teachers, the average number of total years taught was 13.21 (SD = 10.23, range: 1 to 40), and the average number of years taught in the teachers' present schools was 8.52 (SD = 7.52, range: 1 to 28). Some teachers refused to report the grade level for which they taught. Grade levels for the 103 reporting teachers were: 16.5 percent kindergarten; 21.4 percent first grade, 19.4 percent second grade, 15.5 percent third grade, 15.5 percent fourth grade, and 11.7 percent fifth grade.

State Method for Identifying Schools for PI

The Arizona Department of Education identified the schools for PI because of failure to make AYP according to the department's formula. According to state documentation, AYP is determined in the following manner:

> There are two goals for schools in the state: (1) 90 percent of all students will score "proficient" or above in reading comprehension and mathematics from the Stanford Achievement Test, Ninth Edition, extracted items; and (2) No students will score "below basic" on either reading comprehension or mathematics from the Stanford Achievement Test, Ninth Edition, extracted items. These goals will be accomplished by the year 2005. Progress toward these goals will be evaluated first by a measure derived from a subset of test items on the state-administered Stanford Achievement Test. The evaluation will include reading comprehension and mathematics test items aligned to the state standards, as measured in Grades 3, 8 and 12. Yearly attainment of reasonable objectives related to either or both goals will be determined as AYP. (Arizona Department of Education, 1999)

Arizona began calculating AYP based on the 1996–1997 spring test scores. For elementary schools serving K–5, the proportions of third-grade students who scored proficient or above in reading comprehension and mathematics, and below basic on the same subtests were computed. For Goal 1 and by subtest, the percentage of students in a school who were proficient or above was subtracted from 90 percent (the expected goal by 2005). The difference was divided by eight to represent the expected amount of yearly improvement needed to reach the goal by 2005. By adding the expected amount of yearly change to the observed 1996–1997 percentage, an expected growth rate was produced for each school over the 8-year period. For each year, if the school's observed value was below the expected growth rate, the school was identified as not making AYP. However, if a school was above expectations in one subject, but slightly below in the other, the school would have made AYP for Goal 1. AYP was computed similarly for Goal 2. The percentage of students scoring below basic in each subject in 1996–1997 was divided by eight, which represent the yearly amount of decrease the schools were expected to make to reach 0 by 2005. The observed percentage was compared to the expected decline rate yearly, and if the observed percentage was above expectations, the school did not make AYP. Because the observed-expected differences in each subject were combined, a school could compensate for lower-than-expected performance in one subject with higher-than-expected performance in the other subject. Nonetheless, schools had to reach Goals 1 and 2 each year to make AYP. All five schools failed to make AYP in both goals for the 2000–2001 school year.

Testing The Hypotheses

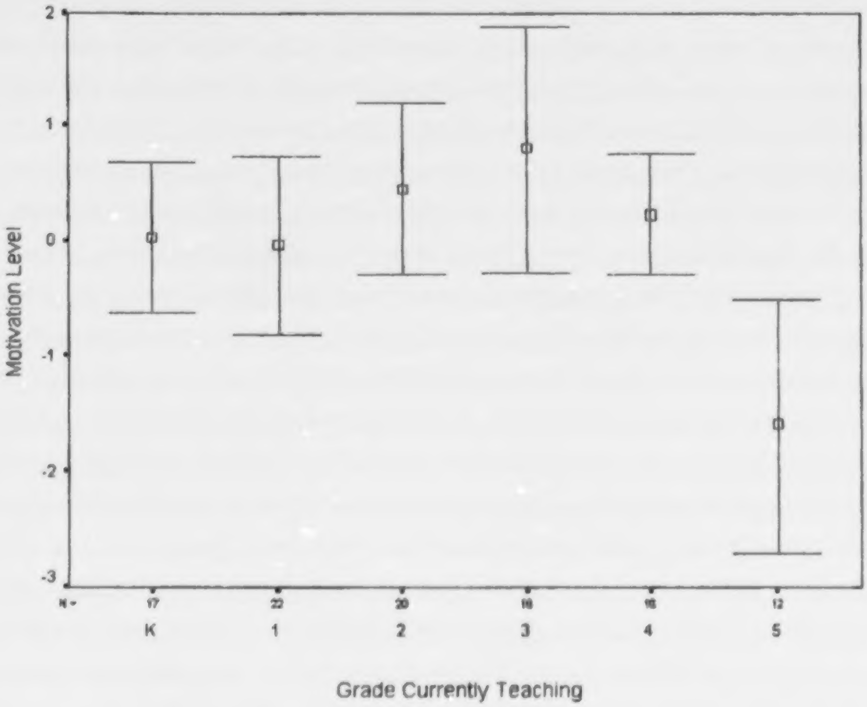
1. Once teachers are informed that their school was identified for PI, they will become more motivated to improve students' test scores.

Teachers were asked to report on a 4-point scale ("strongly agree," "agree," "disagree," "strongly disagree") their positions on four survey items designed to measure their intent to work harder to improve test scores. The four items were:

- I plan to work even harder than I have to get our school off PI.
- My total energy at work will be devoted to getting our school off PI.
- I will not put forth more effort than I have already to improve students' test scores to get our school off PI (reverse coded).
- I will give it my all to get our school off PI.

Overall, teachers' responses to the four items were rather evenly distributed among the four choices. Using item-response-theory measurement, we determined that about half the teachers reported being more motivated to improve test scores after PI identification, whereas half the teachers reported that PI had no influence on their motivation levels. Given the state's system of focusing entirely on third-grade scores to determine AYP for elementary schools, one might expect that third-grade teachers would be the most motivated to change test scores followed by teachers in kindergarten through Grade 3. Teachers in Grades 4 and 5 likely would be the least motivated because the progress of their students had no bearing on the school's PI status.

These expected findings were supported to a modest degree with the data. Figure 1 presents teacher mean motivation scores with 95 percent confidence intervals by grade level taught. The overall grand mean for all teachers on the variable was zero, which was similar to the mean for kindergarten teachers. Mean values increased from first to third grades. The mean for fourth-grade teachers was less than for third-grade teachers; however, the difference was not significant. Fifth-grade teachers, on average, reported significantly lower motivation levels than third-grade teachers.[1] There were no other significant mean differences, indicating that the



Note: Error bars represent 95% confidence intervals. "Grade Currently Teaching" was not reported by 37 teachers.

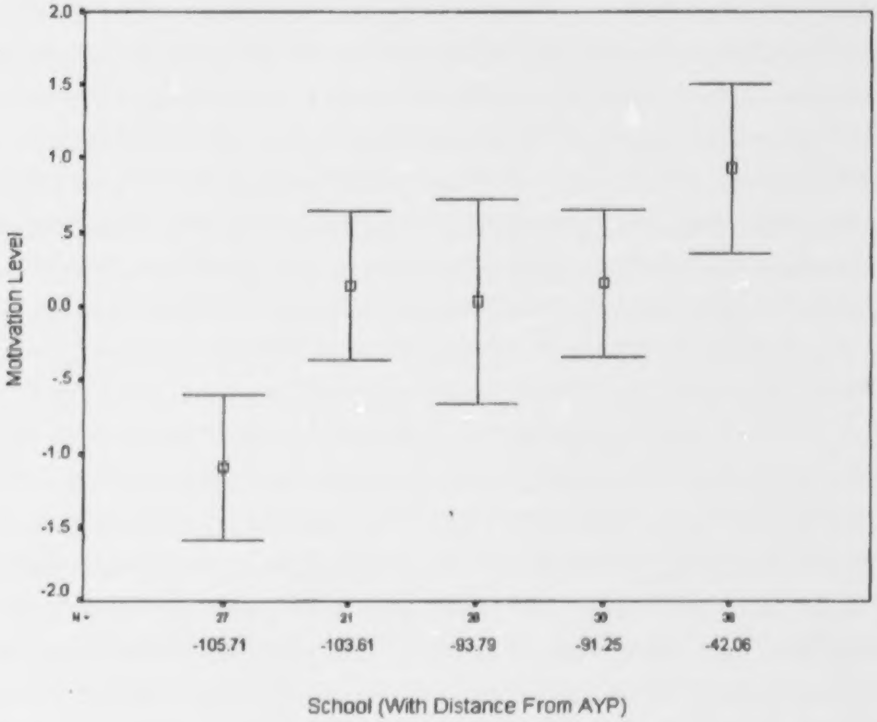
FIGURE 1
Teacher Motivation Level by Grade

expected effects were not large enough to be detected with these data given the small sample sizes diminished statistical power.

In sum, the results of these analyses partially support the hypothesis that PI identification will motivate teachers to try harder to improve test scores. Some teachers appeared to be motivated by their school's PI identification. Other teachers reported no anticipated change to their motivation levels. Because Arizona, like many states, tests in selected grades for PI, state testing policies appeared to have some influence on teachers' motivation levels. Those teachers responsible for instructing the students whose scores were used to identify schools for PI appeared to be the most motivated to improve scores. Yet this effect was not pronounced, and it is possible that principals assigned their more motivated and enthusiastic teachers to higher-stakes grades. Notwithstanding, if comprehensive schoolwide reform is the ultimate goal, motivating only a portion of the teachers in a school likely will not lead to complete goal attainment.

2. Teachers in schools further from making AYP will be more motivated to improve students' test scores than teachers in schools closer to the goal.

The five schools varied in the degree to which their observed test scores differed from the Arizona AYP criteria. That is, schools varied in how close they were to making AYP over the 3 years of test data that existed for the analyses. We computed an index of the distance between actual and expected test scores for each school. Those schools with larger negative values had greater gaps between actual and expected scores in reading and math for state Goals 1 and 2. Figure 2 presents the between-school variations of teacher motivation. The distance to AYP is provided for each school. The school with a value of –42.06 was closest to making AYP over the 2-year period. From the distribution of school means, taking into consideration the 95 percent confidence intervals, it is quite apparent that motivation varied significantly between schools. An ANOVA (reported in the figure note) revealed that 18 percent of the motivation variance was between schools. A clear pattern of means is evident in the figure. The school furthest from AYP had the least motivated teachers, and the school closest to AYP contained teachers who were the most motivated. Indeed, by



Note: Error bars represent 95% confidence intervals. For School factor, F (4,135) = 7.39, $p < .001$. $R^2 = .18$.

FIGURE2

Teacher Motivation Level by School (with Distance from AYP)

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reviewing the error bars, it is apparent that very few teachers in the school in need of the most improvement reported being motivated to try harder. Contrarily, very few teachers in the school closest to making AYP reported that they were not motivated to improve tests scores.

These results were opposite to what was anticipated based on the hypothesis. It appears that teachers get discouraged and lose morale if AYP goals seem unattainable. Of course, it is possible that schools with initially low teacher morale contain students who score lower on achievement tests. Regardless of causal direction, if many teachers in low-performing schools are not motivated to improve test scores, it might make more sense to set more realistic sub-goals for these schools. Setting lofty goals for these schools might do nothing more than further demoralize these teachers.

3. Teachers will try harder if a threat for corrective action exists in schools that continue to not make AYP.

We asked teachers to predict the likelihood the state would resort to certain corrective actions stipulated in federal guidelines if their schools continued to be identified for PI. We correlated their motivation scores with the degree they felt each corrective action would occur. The specific corrective actions they were asked to respond to on a 4-point scale ("Very Unlikely," "Unlikely," "Likely," "Very Likely") were:

- School staff will be reconstituted.
- A new research-based curriculum will be implemented.
- A comprehensive school reform model will be implemented.
- School funds will be withheld.
- It will be specified for school how funds will be spent.
- School decision-making authority will be diminished.
- School governance arrangement will be altered, such as creating a charter school.
- Students will be given option to transfer to another school in the district.

Three of the eight zero-order correlations between each corrective action and motivation level were statistically significant at a p value of < .05. The three significant correlations were among the more drastic corrective actions: "school's staff will be reconstituted" (r = .20); "school funds will be withheld" (r = .17); and "it will be specified for school how funds will be spent" (r = .17). Although statistically significant, these values represent modest correlations, accounting for 4 percent or less of the motivation-level variance. The five nonsignificant correlation values were less than .10. One explanation for these low values that we explored was possible range restriction on the corrective-action items. Substantial proportions of teachers were distributed at all 4 scale points on each item, which ruled out this potential reason for the small correlation values.

In general, teachers who felt the state would resort to certain corrective actions were no more likely to report being more motivated to improve student test scores. For those teachers who felt the state would indeed take corrective action for continued failure to make AYP, the threat of corrective action was not strong enough to increase their motivation levels. Some teachers who felt the state would take drastic action, however, did report higher motivation levels. Yet there were many teachers who both felt the state would resort to extreme measures and were not more motivated to change due to PI. Thus, corrective action might be helpful for certain school stakeholders such as parents, but it is unlikely that school improvement through corrective action will be the result of teachers deciding to change in order to avoid possible actions taken by the state.

4. Teachers will commit to states' PI systems

We asked teachers to report their degree of agreement with items pertaining to their attitudes toward the PI process and the state's method of identifying schools for PI. These items were:

- Students' achievement test scores serve as a good indicator of our school's performance.
- I think PI is a worthy component of Title I.
- I'm in favor of the state identifying schools for PI.
- PI is a waste of our school's time and energy.

Both the averages and distributions of teacher responses on all four items indicated that few teachers agreed that the state should identify schools for PI or that students' test scores should be used as the criterion to determine AYP. Over 70 percent of teachers either disagreed or strongly disagreed with the statement, "I'm in favor of the state identifying schools for PI." Over 80 percent disagreed or strongly disagreed with the statement, "I think PI is a worthy component of Title I," and slightly less than 70 percent agreed or strongly agreed with, "PI is a waste of our school's time and energy." In terms of teachers' feelings about using test scores as a gauge of their school's effectiveness, 94 percent of teachers disagreed or strongly disagreed with the item, "Students' achievement test scores serve as a good indicator of our school's performance."

Several teachers reported upon returning their survey that many third-grade students were not administered the state-mandated achievement tests due to limited English proficiency status. These teachers felt it was not fair and accurate to base their entire school's performance on the scores from a fraction of students in one grade. Apparently, most teachers did not "buy in" to the state's method of identifying schools and felt their school was performing much better than reported by the state. Though most teachers held negative attitudes toward PI, together the four items did not correlate highly with motivation scores. Thus, a number of teachers reported that they disagreed with the identification method and the apparent benefits of PI, but would work harder toward improving test scores. The commitment to try harder likely would be stronger if these teachers had more faith in the identification system.

RECOMMENDATIONS AND CONCLUSIONS

This analysis of the implied logic of Title I PI suggests that teachers' responses to their school's PI identification and their psychological engagement in the improvement process will be necessary before reform activities can emerge. A few individuals at a school can develop a PIP to describe the actions a school will take to improve. But unless teachers believe in the plan, come to terms with the identification of their school as in need of improvement, and feel they have the wherewithal to make change, it is doubtful that the plan will be enacted in teachers' classrooms. Present Title I guidelines do not provide states any direction in how to facilitate teacher commitment to PI or their appropriate involvement in the process. Though it is rather premature to offer specific recommendations on how to improve the guidelines with survey data from one school district, the results and discussions with teachers provide the basis for making the following preliminary suggestions about how states can structure the PI process more fruitfully:

- *Accessibility and Awareness.* Rather than merely informing school principals, states should ensure that all teachers in schools be notified as soon as possible once schools have been identified for PI. In some of the schools observed, principals did not inform teachers until several months after the schools had been identified for fear of teacher demoralization. Obviously, if teachers do not know they are being asked to improve, deliberate change will not occur. Notifying only the principals is not adequate to communicate to the entire staff that the school did not make AYP. State and district personnel who are knowledgeable about the process should make site visits to each identified school to explain in detail (a) how schools were identified, (b) what the school needs to accomplish to be removed from PI, and (c) what the consequences are if they are not removed. The great majority of teachers in the PI schools observed had no idea how AYP was determined and what the potential consequences were if they continually failed to make it.

- *Commitment.* Many teachers surveyed held negative attitudes toward PI in general and especially toward the PI identification process. Teachers did not feel that a few students' test scores were adequate to judge the entire school. They also reported that several factors that influence test scores are outside their control, which is not considered by the AYP system. Teachers further complained that because their district was rezoned the previous year, the demographics of their student bodies had changed. Thus, teachers believed that each third-grade cohort was considerably different and that comparisons of each cohort's test scores were fundamentally flawed. States should develop an AYP system that controls for factors beyond teachers' control and that is based on the majority of students in the school. Although the 1994 legislation removed the yearly testing requirement to diminish the amount of time devoted to testing, most districts and states administer a yearly achievement test either in lieu of the state standards-based assessment or as a supplement. Given the high-stakes nature of PI identification, a more reliable and accurate identification system likely would be based on adjusted yearly student gain and multiple outcome indicators. Inevitably, some teachers will resist their school's identification, but improving the quality of identification criteria should aid enormously in increasing teacher commitment to reform.
- *Clarity.* Besides developing accurate and comprehensive AYP criteria, teachers must have a clear understanding of how their school was identified. Overly complex formulae or systems based on innumerable outcomes should be avoided for the sake of clarity. States must find the optimal balance between accuracy and interpretability when developing AYP criteria.
- *Consequences.* Many teachers in PI schools did not know about the potential consequences that might ensue if their schools were not removed from PI. Some teachers did not believe consequences would occur if their schools failed to improve. From the beginning of a school's identification, the state must communicate the corrective actions that would take place if improvement does not occur. Corrective actions that are more constructive than punitive likely would be more effective in terms of improving schools.
- *Direction.* Teachers need to know which specific objectives students must attain to move to the next performance level. States should provide teachers in PI schools detailed information about the structure of test content. Guidelines should be included that encourage schools to develop their own internal assessment systems that mirror the state standards but that can be administered in little time and with little cost.
- *Feasibility.* In some states, AYP indicators are set at unrealistic levels, which has led many teachers to wonder if their students will ever be

> able to perform at the level necessary to remove them from PI. Most of the teachers we surveyed did not believe their school would make AYP in one or five years, given the state's expectations. Besides decreasing teacher buy in, setting unrealistic performance standards demoralizes teachers and leads them to think, "What is the use of trying harder; our students will never reach the standards." States should have teacher committees help them set reasonable AYP standards that avoid promoting mediocrity, but that can be attained if significant school reform occurs.

Addressing teacher needs while simultaneously upholding the mission of Title I PI is a difficult task. Some schools fail because of teacher inactivity, lack of concern, or lack of skill. A system that caters to the needs of these teachers is doomed to fail. Yet most failing schools contain caring and high-quality teachers who are caught in a difficult predicament. These teachers are in need of moral support, clear information of what is expected from their students, and useful assessment information that can help them improve their practices. Labeling them and having them develop a PIP probably will do little but demoralize them further. States need to deliberate carefully to develop a strategic PI system that capitalizes on theories of effective school change.

NOTE

1. Detailed psychometric and statistical results of the analyses are not reported in this chapter in order to highlight the policy implications of this study. This information is available from Jerome D'Agostino at jerryd@u.arizona.edu.

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SECTION III

EQUITY

CHAPTER 10

TITLE I IN CALIFORNIA
A Focus on English Language Learners, 1995–1999

Diane August and Dianne Piche

Since 1965, Title I of the Elementary and Secondary Education Act (ESEA) has provided federal assistance to schools to meet the educational needs of disadvantaged students. In 1994, Congress substantially overhauled the program. The 1994 amendments asked states, local school districts, and schools receiving Title I funds to shift the focus of the program from remedial education to high standards and higher achievement—reforms that had been advocated by a broad coalition of civil rights and education organizations. These reforms called for raising academic standards; building the capacity of schools; developing new assessments aligned with standards; ensuring accountability by school officials; and fully including all students, particularly those with limited English proficiency and disabilities, in Title I programs, testing, and accountability.

The provisions in the 1994 amendments specified particular duties of education officials at each of three levels—federal, state, and district—to ensure that federal resources were used effectively, in combination with other resources, to improve the achievement of disadvantaged children. The federal government, through the U.S. Department of Education (USDE), was responsible for guiding and enforcing compliance with the federal law. The department was empowered to promulgate regulations and guidance, to approve or disapprove state plans for compliance, and to review and monitor state activities to ensure that states were carrying out the requirements of the law. Significantly, the department was authorized to take enforcement action, which included withholding federal assistance when recipients did not comply with the terms of a federal aid program.[1]

Each state in turn had primary responsibility for establishing a standards-based framework for implementation of the law. For the 1994 amendments, California and other states were required to develop content and student performance standards, fair and accurate assessments aligned with those standards, and a system to hold schools and districts accountable for progress. Moreover, the states provided or brokered technical assistance, monitored districts' implementation of program requirements, and intervened where warranted to provide assistance to low-performing districts and to take corrective action if necessary.

In California, as in other states, school districts allocated Title I funds, developed the curriculum and provided the professional development to help schools meet these standards; they were also permitted to provide additional assessments to help school personnel measure student performance. Federal law also required school districts to identify Title I schools in need of improvement and to take corrective action if such schools had not made adequate yearly progress for two consecutive years. Because the state defaulted for several years on its obligation to set statewide standards, many districts moved to fill the void by developing their own content and performance standards.[2]

In 1997, the Citizens' Commission on Civil Rights initiated a project to monitor and assess the progress made by the federal government and by targeted states and school districts in carrying out the 1994 amendments to Title I. In this chapter, the Citizens' Commission reports on field research on statewide policies and practices with respect to Title I in California.

Methodology

To examine the implementation of Title I, the Citizens' Commission tracked implementation of the 1994 law from the federal government to the California Department of Education (CDE).[3] The field research was completed in 1999 and supplemented with additional research in the spring, summer, and fall of 2000 to reflect later developments in state policy and practice with regard to assessment and accountability.

At the USDE, the Citizens' Commission obtained materials and other information with respect to California's consolidated state plan as well as correspondence related to compliance with Title I's final assessment provisions. The Citizens' Commission also conferred on several occasions over the course of this project with Marshall Smith, Judith Johnson, Mary Jean LeTendre, and Goodwin Liu.

At the CDE, the Citizens' Commission met with the following people: Hannah Walker, director of District and School Support Division; Norm Gold, acting director of School and District Accountability Division; Barbara Brandes, acting manager of Local Accountability Assistance Office;

Maria Trejo, manager of Language Policy and Leadership Office; and Dan Holt, consultant with the District and School Support Division. We obtained copies of state laws, department regulations, documents pertinent to Title I, the Consolidated State Plan, and general information items such as the California Handbook of Education Information, English-Language Arts and Mathematics Content Standards for California Public Schools, Tool Kit for Consolidated Application for Funding Categorical Aid Programs, and Coordinated Compliance Review Manual. Copies of department documents relevant to the Improving America's Schools Act also were obtained from the department's website.

Organization of this Study

In the sections that follow, the Citizens' Commission's researchers provide background information on California, describe the implementation of the 1994 Title I provisions in the state, and comment on the challenges the state faced in implementing Title I so that disadvantaged children would have the opportunity to achieve high standards.

BACKGROUND

State Context

California is one of the most critical states in the nation for the standards-based reform movement. It is significant both because of the large and increasing numbers of poor and immigrant students and because of the strains that ever-increasing enrollments and insufficient resources have placed on the public schools.

According to the Council of Chief State School Officers (1999), in 1997–1998, 5.73 million students were enrolled in Grades K–12 in California public schools. According to 1997–1998 census data, 25 percent of the state's children lived at or below the federal poverty line (U.S. Department of Education. National Center for Educational Statistics, 1999). Nearly one fourth of the public schools were challenged by high concentrations of poor students. The National Assessment of Title I found that such high concentrations of poverty can contribute to substantial reductions in student achievement. In 1996–1997, 23 percent of public schools (1,862 schools) had 75 percent to 100 percent of their students eligible to participate in the federal Free and Reduced Lunch Program, and 22 percent of schools had 50 percent to 74 percent of their students eligible for the Free and Reduced Lunch Program (U.S. Department of Education. Planning and Evaluation Service, 1999).

A large and growing segment of the California student population are English language learners (ELLs). In the Language Census completed in March 1998, California school districts reported a total of 1,406,166 ELLs enrolled in kindergarten through Grade 12. This number represents about 25 percent of California's 5.7 million students and 41 percent of the approximately 3.5 million English learners estimated in the United States in 1996. Overall, California students were approximately 40 percent White (non-Hispanic), 9 percent Black (non-Hispanic), 41 percent Hispanic, 2.4 percent Filipino, 8 percent Asian, and 1.5 percent American Indian/Alaskan Native or Pacific Islander (CSSO, 1999).

California is also important because it receives more Title I dollars than any other state. In the 1998–1999 school year, California's combined basic and concentration grant allocation was $829,978,270, far more than that of New York or Texas and 11.4 percent of the national total. Los Angeles County alone had an allocation that approximated that of large states like Illinois and Florida.

In addition to its large size and numbers of economically disadvantaged students, California has had an inconsistent record of addressing the needs of its students. For example, while state court legislation in the 1970s sought to level the playing field by equalizing per-pupil expenditures statewide, Proposition 13 (property tax limitation) contributed to the state ranking near the bottom of all states in the country in per pupil expenditures for elementary and secondary education.

California districts, however, have seen an influx of new funding in the last several years. According to Education Week ("Education spotlighted," 1999), the state planned to hike general-fund spending on education for the fiscal 2000 budget by $1.6 billion over the previous year to $26.4 billion, a 6.6 percent increase. The average spending per pupil would rise to $6,025. Despite this increase, the amount would still be far below the national average for the 1999–2000 school year of $7,583.

With regard to the allocation of new resources, $192 million in state aid was to complement new legislation to hold students and schools more accountable for their performance. Of this total, $96 million was to be allocated to help 430 low-performing schools, an additional $96 million was to be used to reward schools that improved on state performance indicators, $50 million was to be spent to help districts raise the minimum teacher salary to $32,000 for fully certified teachers, and $50 million was to be used to provide bonuses of up to $25,000 per teacher at low-performing schools where students showed academic improvement. The budget was to provide $134 million in one-time aid for new textbooks and $25 million for K–4 library materials.

The new funding sought to alleviate the large disparity between the resources afforded poor and affluent schools. According to a 2000 study conducted by the Public Policy Institute of California ("Study finds unequal education," 2000), at elementary schools with the most impoverished students, nearly 22 percent of teachers lacked credentials. At schools with more affluent children, the figure was 2 percent. Another area of inequality was the number of advanced placement classes available to students. The researchers found that 16 percent of California high schools offered no advanced-placement (AP) classes and 11 percent offered just one or two.

Student Outcomes

California has consistently lagged behind the rest of the country in student achievement. The state ranks near the bottom of states on the National Assessment of Educational Progress (NAEP). For example, on the 1998 NAEP reading assessment, at the fourth-grade reading level, only three participating states had lower percentages of students who were at or above "proficient" on NAEP (Louisiana, Mississippi, and Hawaii). Overall, only 20 percent of California's fourth-grade students were at or above proficient on NAEP in reading. The achievement of poor and minority students was much lower, with only 7 percent Black, 8 percent Hispanic, and 7 percent free/reduced price lunch-eligible students at or above proficient.

Moreover, the state's record on high school completion is poor. For example, one third of its ninth graders in 1993 failed to graduate from high school four years later. The numbers for Black and Latino students are higher; 45 percent of Black and 46 percent of Hispanic ninth graders failed to graduate on time, or at all. Of the minority students that do graduate, fewer than 30 percent meet the entrance requirements for the University of California or California State System, the state's extensive public 4-year college systems. And among more selective campuses (e.g., UCLA and UC Berkeley) admission of minorities is further hampered by unequal access to AP courses.

When statewide achievement testing is used as a barometer for student achievement, results of the testing in the spring of 2000 indicate that California is doing an average job of educating fluent-English-speaking students, but not nearly as well with the one million English language learners and 1.5 million low-income children ("Glaring Gap," 2000). Students in Grades 2–12 take the Stanford 9 test. The top score is 99 and the national average is 50. Although 56 percent of English-fluent second graders scored at or above the national average, only 19 percent of English language learners scored at this level. At the fifth-grade level, only 9 percent of English language learners were above the national average in reading. In math, 52 percent of all English-fluent eighth graders met or surpassed the national average compared with 15 percent of English language learners. Moreover, scores for low-income students—those who qualify for free or reduced priced lunches—were on average only half as high as scores of the

2.7 million test-takers who were not classified as economically disadvantaged. In reading, 22 percent of low-income fourth graders scored at or above the national average, compared with 56 percent of fourth graders who are not economically disadvantaged. In math, 33 percent of low-income fourth graders scored at or above the national average, compared with 56 percent of more affluent sixth graders.

Class-Size Reduction and English-Only Instruction

In 1996 California implemented a class size reduction program, reducing class sizes from 30 to 20 in the kindergarten through third grade in public schools. As of June 2000, the state had invested a total of $4 billion in the program at the rate of $1.5 billion per year ("Smaller Classes," 2000). According to a recent study conducted by Rand and the American Institutes for Research, 92 percent of California's students in kindergarten through third grade were in smaller classes. The study also found that third-grade students enrolled in reduced-size classes performed slightly better than those who were in larger classes. For 1998–1999, the smaller third-grade classes produced 3.5 percent more students performing above the 50th percentile in language; 3.6 percent more in math; 1.4 percent more in reading; and 1.4 percent more in spelling. The gains were found across all socioeconomic levels. There has been some criticism of the program, however, because the program prompted the rapid hiring of an additional 28,500 teachers in California, many with little or no experience. Also of great concern is the decline in teacher qualifications in schools with the highest concentration of poor and minority children.

Proposition 227, a ballot measure passed in 1998, requires most bilingual education programs in California to be replaced with one-year English immersion programs. Districts are allowed to continue bilingual education programs only through a waiver process by which parents can remove their children from English immersion classes. By the end of the first year of implementation, the percentage of English language learners in California schools that were enrolled in bilingual programs dropped from 29 percent to 12 percent. There is considerable controversy in the state regarding the outcomes of this legislation; proponents of English-only instruction attribute ELL students gains in some school districts to the legislation, while proponents of bilingual education maintain that the gains cannot be attributed to 227, but to reduced class size and greater accountability. Moreover, as a result of the legislation, many teachers were placed in the position of teaching only in English without requisite training or materials. According to a report by the Linguistic Minority Research Institute of the University of California (1999) that studied 16 California districts during the first year of Proposition 227 implementation,

> none of the districts studied provided systematic training for teachers to make the transition from one kind of instruction to another. In interviews with researchers, teachers complained they lacked materials for new English-immersion classes, as their administrators told them not to used textbooks in students' native languages but didn't replace them with anything else. (Zehr, 2000)

Consolidated State Plan

A new provision in the 1994 amendments to the ESEA permitted states to submit a consolidated plan and application for funds under the Act, including Title I. Like virtually all other states, California submitted a consolidated state plan (CSP) to the USDE for approval in 1996.[4] In California, the CSP serves as a planning and evaluation tool for department staff, a sample planning document for school districts and schools, and a consolidated program evaluation for the USDE. The document has been updated to reflect policies enacted by the State Board of Education (SBE) as well as guidance and administrative decisions of the USDE. The areas described in the CSP include:

- state standards;
- multiple assessments and accountability procedures;
- effective teaching and learning models and strategies;
- professional development;
- partnerships among schools, parents, families, and members of the community; and
- funding and governance structures.

The department used an internal Improving America's Schools Act (IASA) work group consisting of representatives from each of the programs identified in the CSP. The group met on a quarterly basis to review the implementation of the strategies and timelines identified in the plan, discussed common programmatic/fiscal issues or concerns, identified ways to collaborate across programs and units, and discussed promising practices and the implementation of successful strategies (see CSP update, 1999).

STATE CONTENT AND PERFORMANCE STANDARDS

Content Standards

AB 265 is the enabling legislation for the mandatory state standards program. It required the SBE to adopt content and performance standards by January 1998. As of 1999, the State Board had adopted state standards by grade level for language arts, math, science, and history/social science.

On the basis of content standards, the state developed frameworks in reading/language arts and math. The SBE planned to spend $1 billion ($250 million a year over four years) on textbooks that were aligned with the standards and frameworks. The state board endorsed a list of math and language arts texts for schools to buy with the new funds. According to a state board member, the books on the list were intended to help districts "fill in the gaps" in their textbook collections with ones that met the new standards (Johnson, 1999).

Performance Standards

Performance standards establish how students will demonstrate what they have learned and describe the evidence needed to demonstrate their achievement. The state established the 50th percentile as its standard for grade-level performance on the Standardized Testing and Reporting (STAR) test for 1997–1998.[5] In April 1998, the SBE initiated the development of new performance standards by adopting the three performance levels used by NAEP: basic, proficient, and advanced. Performance standards for writing and math had not been completed; performance standards for STAR language arts were set in August 2000. Beginning with the STAR 2001 administration, student reports of results were to indicate the level at which the student performed in language arts, according to the number of correct answers on the California Standards Test (there are 40 Stanford 9 items at Grades 2 and 3, 55 Stanford 9 items at Grades 4 and 11, with 35 California "custom" standards items at Grades 2 through 11).[6]

Application of Standards to English Language Learners

According to guidelines from the California Department of Education (1999), school districts and individual schools were required by federal law to provide evaluation and accountability data that indicated specially funded students were learning the district's core curriculum.[7] State laws and regulations (e.g., the Public School Accountability Act) also required that a district have results of an annual evaluation, demonstrating that each of its participating schools was implementing consolidated programs that were effective under criteria established by the local governing board. Furthermore, compliance issues in the *State Program for English Learners (I-EL2a and b)* required that a district assemble individual and group data to show that ELLs were acquiring English proficiency and progressing in the district's core curriculum at a rate that would enable them to meet grade-level academic standards within a reasonable period of time (see California Department of Education, 1999).

Directives from the USDE and the CDE regarding the IASA also required school districts to set standards, assess the progress of students, and disaggregate achievement data for groups of students participating in programs such as English learner, Immigrant, Refugee, Migrant, and Title I Education.

In addition, the CDE also strongly encouraged districts to establish a standards-based evaluation system for these students consisting of content and performance standards, assessment, data collection, data management, analyses and reporting, and use of student and program information. The CDE provided a guide for districts to use in the application of a standards-based evaluation and accountability system in schools and school districts that enroll significant concentrations of language minority and immigrant students. With regard to content and performance standards, the state indicated that the standards adopted for ELLs and former ELLs and immigrant students in the core subjects should be the same standards as those required for mainstream students, with interim benchmarks set to allow for some reasonable period of time before ELLs were expected to meet grade-level norms. Furthermore, as part of the core curriculum, ELLS were expected to receive English language development (ELD) until they were redesignated as fluent in English. During the time they were enrolled in ELD classes, their performance was to be measured according to the ELD standards adopted by the SBE or other standards of equal or greater rigor. ELD standards, unlike the other standards developed for each grade level, were based on the number of years of instruction and contextualized by the English language proficiency levels such as beginning, early intermediate, intermediate, early advanced, and advanced and also by grade spans (K-2, 3–6, 7–8, 9–12). In programs where ELLs were enrolled in a course of study that included primary language arts instruction, this instruction was to be comparable to the mainstream English language arts standards and was to be articulated with both the ELD and mainstream English language arts curricula and standards.

State Versus Local Standards

Districts were expected to establish content and performance standards based on those adopted by the SBE. In the CSP, however, the CDE made clear that "IASA requires districts to set local content and performance standards that are at least as rigorous as state standards. "Rigor" refers to such matters as the amount, depth, and timing of the content covered and the level of achievement needed for meeting the standard. Standards must be set for each grade level K-12" (CSP update, 1999, p. 7).

ASSESSMENT

Legislation in California, SB 430, required that work on assessment development begin after the adoption of the content and performance standards. Concurrently, mandatory assessment (with transitional assessments) began in the 1998–1999 school year. The guidelines promulgated by the legislation exceeded the federal minimum guidelines for transitional assessments by *recommending* the assessment of students in every grade level, K–12.

General Provisions

Districts were required to use STAR test (Stanford-9, Form T) for state accountability purposes. Under the STAR provisions, students in Grades 2–8 had to be tested in the basic skills of reading, spelling, written expression, and mathematics. Students in Grades 9–11 had to be tested in reading, writing, math, history/social science, and science. Using the designated test, schools had to report individual student scores to parents by June 30 of each year.

According to CDE staff, the SAT-9 test was augmented so that language arts and math items on each grade-level test were aligned with state standards. The augmented assessment added 20 items for each subject matter area assessed to the original SAT-9. The augmented test was first administered in 1999. An assessment that required each student to write on a specified topic was to be administered in Grades 4 and 7 in Spring 2001 as part of California Standards Test (STAR augmentation). The writing assessment score was to be combined with other STAR results to produce a single score for English/language arts for each student and for aggregation of results at the school level and above. The California Standards Tests in history/social science were to be administered for the first time in Spring 2001 in Grades 9 through 11. California Standards Tests in science in Grades 9 and 11 were to be administered for the first time in Spring 2001. In addition, all students were to continue to take the Stanford 9 test in science appropriate to grade-level enrollment. It should be noted that until the augmented test was determined to be valid and reliable, it would not be used for accountability purposes.

Senate Bill 2X, passed in 1999, required the state to implement a high school exit examination. The law required that beginning with the 2000–2001 school year, districts were to notify parents or guardians of this new requirement. The law stated that a pupil could take the high school exit exam in Grade 9 beginning in the 2000–2001 school year. Each pupil was required to take the high school exit exam in Grade 10 beginning in the

2001–2002 school year and could take the examination during each subsequent administration until each section has been passed. Field testing for the assessment was conducted in May 2000 at selected sites throughout the state. The test was administered for the first time in 2001. It was expected to be used as a graduation requirement beginning with the class of 2004, although an evaluation of the development of the test indicated that schools had not made adequate preparations for students to learn the required content (HUMRRO, 2000).

The SBE approved a long-term plan for the state testing program, based on six principles that were to guide test development and lead to a more coordinated and efficient assessment system (California Department of Education, 2000b). The principles are

a. all state tests will conform to high technical standards,
b. state tests will focus instruction on mastery of state content standards,
c. the STAR standards tests will be the "core" of the state testing and accountability system,
d. a nationally norm-referenced test will provide national comparisons of student achievement, and
e. STAR tests will be integrated with other state tests into a coherent system of assessment.

The plan envisioned a "completed" state assessment system by the 2002–2003 school year and described a timeline for the development of the system.

English Language Learners

In addition to taking the designated test in English with no exceptions allowed (the Stanford-9), Spanish-speaking ELLs who had been enrolled in California public schools for less than 12 months also had to take a test in their primary language, the SABE/2, published by McGraw Hill. ELLs from other language groups who had been in school for 12 months or less had to also take a primary language standardized achievement test if one was available. Primary language testing was optional for English learners who had been enrolled more than 12 months. Districts wishing to test students in languages other than English and Spanish could do so, but no state apportionments were made for such testing.

According to a CDE guide for designing a standards-based accountability system for language minority and immigrant student populations (1999), in cases where a mandated test, such as the SAT-9, was not a valid and reliable measure for use with ELLs and immigrant students (i.e., had not been normed on these populations), districts were required to take steps to disaggregate scores according to the amount of time ELLs and immigrant students had been enrolled in school. Over time, the guide maintains, "as ELLs and immigrant students approach fluency in English and gain mainstream cultural competence, the validity and reliability of such measures generally improves" (p. 3).

In addition to the state-mandated assessments, districts were encouraged to use multiple measures for each subject area of the core curriculum, including English language development.[8] Districts were encouraged to "utilize assessment approaches that provide the most accurate, valid, and reliable data on the academic standing of individual ELLs and immigrant students" (California Department of Education, 1999). To this end, the state provided guidance to districts in the use of alternative assessments in the primary language, accommodations that could be used with English medium assessments, targeted second language assessments (like the EDL measure the state is developing), and differential assessments (informal assessments aligned with the student's instructional program). It should be noted that while the use of accommodations could be recommended for English medium assessments selected as part of local accountability systems, accommodations were not to be used when administering state-mandated assessments such as the SAT-9 or SABE.

At the time this study was conducted the department's Standards, Curriculum, and Assessment Division was in the process of responding to a recent California law that required the identification or development of an ELD test to assess English learners' language proficiency in listening, reading, speaking, and writing. The test had to be aligned with ELD standards approved by the SBE in August 1999. The ELD assessment was structured to identify five levels of language development: beginning, early intermediate, intermediate, early advanced, and advanced. Districts were to be required to administer the test upon initial enrollment and during one period annually set by the State Superintendent of Public Instruction and the state board. In addition, the state recommended that ELLs and immigrant students be assessed in the Language Arts in the primary language.

CDE guidance further suggested that whenever possible, assessments of subject matter areas such as mathematics, science, social science, health, and other courses required for grade-level promotion should be administered to ELLs in the language in which they are best able to demonstrate their knowledge of the subject matter. They indicated that often this would be the language used in the particular course; however, for ELLs and immigrant students with considerable previous schooling experiences in their primary language, they might be better able to demonstrate knowledge through primary language assessments during the first few years in the United States. The state encouraged districts to establish procedures to determine which language or languages should be used to assess ELLs—English, the primary language, or a combination. The CDE further recommended that when assessments in the primary language were not available, districts should consider appropriate accommodations.

State Versus Local Assessments

For their local accountability system, districts were encouraged to use multiple measures (i.e., a total of two or more measures per subject area) in reading/language arts and in mathematics for all students. Although state-level accountability for 1999–2000 was only based on the SAT-9, the State Superintendent of Instruction strongly encouraged districts to continue to develop and organize local standards-based accountability systems because "continuous information from multiple assessments of students, including district and classroom assessments, is essential to schools and districts in monitoring achievement growth, making instructional improvements, and in implementing programs such as Pupil Promotion and Retention" (California Department of Education, 2000b). In addition, the Superintendent confirmed that local accountability data would continue to play a supplemental role in some state-level accountability.

Compliance with Federal Law

The USDE informed the CDE that the state's assessment program might not be in compliance with Title I requirements for final assessments. In a letter to Hanna Walker, California's state Title I director, USDE Director of Compensatory Education Programs Mary Jean LeTendre indicated the USDE had "concerns regarding the inclusion of all students in your state assessment system in a way that provides meaningful information about their knowledge and skills in relation to the states standards."[9] Ms. Le Tendre's letter specifically inquired about how California would address the need for accommodations for both LEP and disabled students, how such students' scores would be reported, and how the state would address highly mobile students (many of whom, the letter noted, are LEP) in the accountability system. The letter also requested more information on state compliance with Title I's requirement of multiple measures of student performance. In a subsequent letter to state Deputy Superintendent Sonia Hernandez, Judith Johnson, the Acting Assistant Secretary for Elementary and Secondary Education, stressed that key requirements in the federal law must be met by California education officials by the 2000–2001 school year. These requirements included: uniform statewide policies to ensure full inclusion of all students in assessments, disaggregation of assessment results by major racial and ethnic groups as well as migrant status, and the use of multiple measures that "help to ensure the validity and fairness of inferences made about school and district progress."[10]

ACCOUNTABILITY

The Public Schools Accountability Act of 1999

The Public Schools Accountability Act (PSAA) took effect on July 1, 1999. The PSAA had three main components:

a. the Academic Performance Index (API),
b. the Immediate Intervention/Underperforming Schools Program (II/USP), and
c. the Governor's Performance Award (GPA) program. The 1999 API is a numeric index (or score) between 200 and 1000, reflecting a school's performance on results of the 1999 administration of the Stanford 9, a nationally normed test that is administered annually to California public school students in Grades 2–11 as part of the STAR program. Other performance indicators such as the California Standards Test (STAR augmented) and the high school exit exam and graduation and attendance rates were to be added to the API when the data became available. The law required that test results constitute at least 60 percent of the API.

Schools receiving an API score between 200 and 1000 were ranked in 10 categories of equal size (deciles) from 1 (lowest) to 10 (highest). A school's API score and ranking were compared to schools statewide and to schools with similar demographic characteristics. An API score of 800 was to serve as the interim growth target for all schools until state performance standards were adopted. Schools receiving an API score also received API scores for each numerically significant ethnic and socioeconomically disadvantaged subgroup in the school. Growth targets also were set for each subgroup and the school as a whole. To be considered numerically significant, a subgroup had to have at least 30 students with valid Stanford 9 scores, who made up at least 15 percent of the school's tested enrollment and had at least 100 students with valid Stanford 9 scores. Subgroup APIs were calculated for the following categories: American Indian or Alaska Native, Asian, Pacific Islander, Filipino, Hispanic or Latino, African American non-Hispanic, non-Hispanic White, and socioeconomically disadvantaged. A socioeconomically disadvantaged student was defined as a student neither of whose parents had received a high school diploma or a student who participated in the free or reduced price lunch program. English language learners were not considered a subgroup for API calculations.

The annual growth target for a school was 5 percent of the distance between a school's API and the interim statewide performance target of

800. For any school below an API of 800, the minimum annual target was one point. A school with an API of 800 or more had to maintain an API of at least 800 to meet its growth target. In most cases, the growth target for each numerically significant subgroup was 80 percent of the schoolwide target.

The 1999–2000 API growth reports provided in October 2000 included each school's 2000 STAR percent tested, 1999 API base score, 2000 API growth score, 1999–2000 growth target and actual growth, whether growth targets were met, and the school's eligibility for two awards programs. An API and growth report for numerically significant subgroups were also included. Similar schools' growth rank were to be reported in December 2000.

Schools were required to report their API results in their local School Accountability Report Cards annually. Each school district's governing board also had to discuss these results at a regularly scheduled meeting. Generally, API results were reported twice a year: base year reports in January and growth reports in September.

In addition, the SBE in July 2000 approved the framework for an Alternative Accountability System. Schools serving traditional student populations with fewer than 100 students with valid test scores; special education schools and centers; and alternative, continuation, community day, court, community, and county schools serving high-risk populations were to participate in this system as soon as it became operational.

An intervention program was developed (Immediate Intervention/ Underperforming Schools Program) for the 430 schools scoring in the lower half of the statewide distribution in 1998 and 1999. If fewer than 430 schools volunteered to participate in the intervention program as planning schools, schools were randomly selected and representative of three grade levels and academic achievement on the SAT-9. Approximately 100 of the 430 schools were selected by means of the PL 105-79, Comprehensive School Reform Demonstration (CSRD). Planning schools received a grant of $50,000, and an external evaluator was assigned to each school to review the school's operations and to develop a plan of action in collaboration with the school site and community team. CSRD schools received a minimum of $50,000 or up to $167 per pupil. CSRD schools did not need an external evaluation, but instead had external support. If the governing board and CDE approved the plan, in Spring 2000 and every year thereafter, the school could apply to receive up to $200 per pupil to implement the action plan. A school in the intervention program that failed to meet its growth targets 24 months after receiving funding could be subject to SBE SPI action. Any school that did not meet its growth target could be assigned to the Intervention Program. Schools that met or exceeded growth targets would be eligible for monetary and nonmonetary awards. Flexibility would be provided to schools that substantially exceeded growth targets.

For the 2000–2001 school year, $21.5 million was available to support a second group of 430 schools that did not meet their 1999–2000 growth targets. Under II/USP, schools were required to write or revise a school improvement plan and to receive assistance to improve academically. Schools already in II/USP that continued to fall below their targets or did not show significant growth could be subject to local interventions or eventually to state sanctions.

For the 2000–2001 school year, the Governor designated three awards to be given to schools and school-site employees on the basis of API growth: the Governor's Performance Award (GPA), the School Site Employee Performance Bonus (Senate Bill 1667), and the Certificated Staff Performance Incentive Award (Assembly Bill 1114). The GPA and Certificated Staff Incentive awards were ongoing programs, based on annual API growth targets; the School Site Employee Bonus was a one-time award. A combined total of $667 million was allocated for the three awards: $227 million to schools for GPA, $350 million to schools and all staff at a site for the School Site Employee bonus, and $100 million to all certificated staff at a site for the Certificated Staff Incentive.

The PSAA also called for an exit exam for high school seniors, veteran teachers to review colleagues who received unsatisfactory job evaluations from their principals for use in personnel decisions, and new aid to improve students' reading skills, with the bulk of the money going to reading academies for students beginning in the summer of 1999. As previously described, beginning in 2004, seniors will have to pass an exit exam before getting a diploma. Districts had until January 1, 2001 to negotiate peer review programs with their teachers; incentive funds for peer review and mentoring programs went to districts that completed the process by July 1, 2000 while districts that missed the deadline had this aid withheld. Prior to the passage of the PSAA, districts were required to submit accountability reports (including a District Assessment and Accountability System Description, a Student Achievement School Report,[11] and An Identification of Program Improvement Form) to the department each year that identified the assessment and accountability system used, including the multiple measures for determining student performance, the percentage of all students in each school that met or exceeded the district's grade-level standards, and the Title I schools that qualified for Program Improvement. The information was to be reported on the Consolidated Application, Part II by November 1, 1998. Districts seeking approval for alternative accountability methods had additional earlier requirements (submit requests no later than July 1, 1998). During the first year under this accountability system, districts identified approximately 840 schools as meeting criteria for Title I Program Improvement. This number represented more than 10 percent of California public schools. With the passage of the PSAA, districts no longer had to submit to CDE the District Accountability System Description, the Student Achievement School Report, and the list of schools identified for Title I Program Improvement on the Consolidated Application, Part II.

Alignment with Title I Accountability

The CDE worked to align state and federal requirements into a single state accountability system. Data available at the state level from SAT-9 assessments and, in future years, from additional components of the API, were to play the primary role in state-level accountability decisions. Concurrently, the CDE strongly supported the development of local standards-based accountability systems. According to the state, "continuous information from multiple assessments of students, including district and classroom assessments, is essential to schools and districts in monitoring achievement growth, making instructional improvements, and implementing programs such as Pupil Promotion and Retention. In addition, local accountability data will continue to play a supplemental role in some state level accountability decisions" (California Department of Education, 2000a).

The state began to align the PSAA accountability system with Title 1 accountability. In general, the state expected a Program Improvement School to be a Title 1 school that was low-performing on the API. In the future, the state expects that the API will include multiple measures of student performance aligned with California's performance standards. Growth targets on the API were established for each school, for overall performance, and for numerically significant subgroups. Prior to the establishment of these growth targets, low performance on the API served as a filter for schools to become candidates for Title I Program Improvement, with an opportunity for districts to appeal Program Improvement identification based on local accountability data.

During the 1999–2000 cycle for identifying Program Improvement schools, Title I schools ranked in the lowest decile on the API were in Program Improvement, notwithstanding other assessment data. Title I schools in the second decile on the API were candidates for Program Improvement and might be subject to further review based on local accountability data. If local staff believed that such a school should not be identified for program improvement, they had the opportunity to appeal to CDE. They were required to demonstrate that achievement data from a local accountability system, with multiple measures and meeting CDE criteria, showed at least 40 percent of students performing at or above rigorous grade-level standards.

Beginning in 2000–2001, Title I schools were to be identified for program improvement if they failed to make adequate yearly progress for two consecutive years. Schools were not to be identified for Program Improvement based solely on failing to make adequate yearly progress from 1997–1998 and from 1998–1999. Such schools were to be identified for Program Improvement only if they also failed to meet their API growth target in Fall 2000.

Local Accountability Provisions Related to ELLs

According to instructions for local accountability provisions for ELLs (CDE, 1999), data collected and analyses conducted were to assist school personnel in developing responses to basic questions such as:

- Is the program being implemented as planned?
- Are ELLs, former Ells, and immigrant students acquiring English and learning the core curriculum?
- Are these students learning at acceptable rates?
- Are the various instructional practices being used in the program the most effective with these students?
- What improvements should be undertaken?

As mentioned previously, districts were encouraged to use multiple measures to assess ELL success in meeting EDL and core curriculum standards.

PROGRAM COORDINATION AND OVERSIGHT

The federal programs included in the CSP were coordinated and integrated with state and local programs and activities (CDE, 1996). CDE consolidated its administrative funds from Titles I–IV and VI. To continue to consolidate funds, the CDE requested and received approval for its waiver from the USDE through the current (1994) reauthorization. According to the CDE, application processes related to state and federal programs were coordinated toward the goal of having and implementing a single, integrated plan at the district and school levels.

After 1996–1997 the department used two documents, the annual Consolidated Application Parts I and II and the Local Improvement Plan (LIP) to ensure proper distribution and oversight of federal and state funds (CDE, Program Improvement, 1997). The annual Consolidated Application was used by the department to collect data regarding program eligibility, student participation, funding, and assurances of compliance with federal and state law. In the LIP, districts submitted a narrative description of program objectives, assessment and evaluation procedures, students' needs, and instructional and auxiliary services.

Local Improvement Plans

The LIP was a requirement for all local educational agencies (LEAs) that received IASA funds. It was a multiyear planning document developed by LEA (district) administrators, teachers and other school personnel, family, community members, and others who play a role in the academic and social development of children served by the LEA. According to the CDE, the LIP was to reflect comprehensive, coordinated integration among federal, state, and local programs and activities to improve the academic achievement and well-being of all children. As a district-level plan, the LIP provided the framework for individual school improvement efforts.

Between October 1996 and June 1997, approximately 830 LIPs were submitted and reviewed by the department in collaboration with regional teams from the Statewide System of School Support (S4). The SBE approved all LIPs in 1997–1998.[12] There have been significant changes in the LIP since that time to make it more consistent with recent state assessment and accountability provisions.

Coordinated Compliance Reviews

The state established the Coordinated Compliance Review (CCR) to monitor activities related to the state's standards-based accountability system. The CCR process afforded the department and districts the opportunity to complete in one visit a single coordinated review of all state and federal programs. The CDE selected local educational agencies for review of specially funded educational programs for compliance and assurance that the programs supported the district's core curriculum. Districts were on a 4-year cycle and approximately 200 districts were reviewed each year. In preparation for the review, the districts attended review institutes, conducted self-reviews, and submited self-review findings and student achievement data to the CDE.[13] The CDE then reviewed the findings and data and conducted validation reviews. If necessary, the CDE provided additional technical and program assistance to help districts meet state standards. Evaluation was accomplished by internal and external evaluators to ensure that the needs of clients were being met. Internal evaluations were done through department-supported research.

The state and federal program requirements were established to ensure that services reached those students who qualified; districts had to continue to comply with these rules. However, the review process was in transition. In conducting CCRs, districts and the state were to look first at student performance. During the 1999–2000 school year, the CDE made the transition to the API as the centerpiece for analyzing student performance data for CCR purposes. In preparing for the self-review, districts were requested to include the API and its constituent data elements along with other district and classroom assessment results and analyses of disaggregated student achievement data. Districts could continue to use the old format for reporting (i.e., the SASR) or design another method that provided the necessary information. Schools ranking relatively low on the API or not meeting their growth targets, as well as schools identified for Title I Program Improvement, were most likely to be selected for on-site validation. A small random sample of higher scoring schools was also slated to be reviewed.

The CDE attempted to align the process with other recent initiatives. As previously reported, the PSAA created a high-stakes accountability system that held districts and schools accountable for student achievement. Almost all schools in California also participated in STAR and had an annual growth target defined by the API. An advisory committee examined various governance and school planning requirements in the law and made recommendations on technical assistance and needed legislative changes to clarify schools' planning requirements. One recommendation was to consolidate the three review grade-span guides into a single document that would allow broad local flexibility. However, barring legislative or administrative action, the review process would remain intact.

CAPACITY BUILDING

Technical Assistance

Program assistance was provided to individual districts, schools, and agencies according to the unique needs of the clients and through such mechanisms as the S4; elementary, middle school, and high school networks; county or district consortia; county offices of education; and partnerships with Institutions of Higher Education (IHEs).

California's S4, funded by IASA, was a major department initiative to ensure that reforms in standards, assessment, accountability, teaching, and learning were known and implemented at the district and school levels. S4 was the department's collaborative professional development effort with directors of the regional school support and improvement centers (RSSICs), comprehensive assistance centers (CACs), and other entities including school leadership teams and district learning support teams. The members of this network collaborated to plan, implement, and evaluate schoolwide programs. S4 conducted regional training institutes for school leadership teams engaged in writing schoolwide plans and implementing schoolwide programs. In 1999, S4 served approximately 4,000 schoolwide project schools.

California had two CACs funded by the USDE to assist districts and schools in implementing programs under IASA, including the development of standards-based assessment and accountability systems. Northern California was served by the Region XI Comprehensive Center at WestED, and in southern California services were provided by the Region XII Comprehensive Center at the Los Angeles County Office of Education. Also available to assist districts and schools were 11 regional directors in the S4.

District Collaborative Partnerships

In 1998, the department established the District Collaborative Partnerships, a major initiative to improve student achievement through cooperative problem solving between department and district staff. Through this initiative, department staff from teams composed of state and local officials facilitated the implementation of reform at the local level.

Professional Development

Professional development in the CSP was coordinated with the provisions of Goals 2000 in the following areas:

- instructional methods and materials for implementing state standards in reading and math,
- coordination with institutions of higher education to improve the preparation of preservice teachers,
- English language development assessment strategies, and
- strengthening the focus of vocational education in content standards.

Professional development activities focused on:

- standards and assessment,
- students in high-poverty and program improvement schools,
- English language learners,
- family literacy,
- migratory children and youth,
- neglected and delinquent children and youth,
- Title II-sponsored activities,
- safe and drug-free schools,
- homeless students and youth,
- American Indian children and youth, and
- family involvement.

The general focus of professional development activities was on coordination and collaboration across projects, offices, agencies, and institutions; achievement of state standards; and dissemination of information.

COORDINATION OF SERVICES FOR PARENT AND COMMUNITY INVOLVEMENT

A waiver received by the department in 1996 allowed California school districts to request Title XI Coordinated Services as part of the LIP. The department developed guidance and application instructions for Title XI that encouraged integration with LIPs. Several districts submitted requests for coordinated services in 1997 and 1998 and were approved to reserve IASA funds for this purpose. The implementation of coordinated services in these districts resulted in partnerships among educators, families, and communities with the goal of supporting individual and academic achievement for students. Major activities focused on:

- developing effective parent involvement policies and comprehensive home-school partnerships,
- ensuring an integrated approach to parent involvement,
- focusing on meaningful parent and community involvement, and
- increasing family and community participation to help improve the instructional program.

FEDERAL RESPONSE: USDE INTEGRATED REVIEWS

Before 1999, USDE staff conducted three integrated reviews of the CDE (September 1996, May 1997, and May 1998). The reviews were program audits of the department's administration of reform efforts that are supported by the IASA of 1994 and Goals 2000: Education America Act. The review process consisted of three steps:

a. a comprehensive examination of the plan by the regional service team that serves the state to make certain that the plan met legal requirements and to determine if additional information was needed;

b. a review of the comprehensive state plan by a peer panel comprising an outside expert on standards and assessments, an outside expert on other areas of education, and at least one education staff member; and

c. discussion of the state plan on the basis of staff comments, panel findings, and in some cases information provided by the state after the panel's review.

A letter from Gerald Tirozzi to State Superintendent of Public Instruction Delaine Eastin in July 1996 indicated that the department had completed its review of California's CSP under ESEA and had approved the plan for the remainder of the reauthorization period with the following conditions:

- the state had to provide information to USDE by the July 30, 1996 regarding the process and criteria that the state would use during the transitional period to identify schools and local educational agencies in need of improvement on the basis of accurate information about the continuous and substantial yearly academic progress of each school and LEA; and
- the state was required to provide specific measurable goals and objectives for drug and violence prevention under the Safe and Drug-Free Schools and Communities Program (Title IV).[14]

A letter from Mary Jean LeTendre to Sonia Hernandez in March 1998 indicated that states[15] should have developed content and performance standards for elementary and secondary education students who had received Title I services in at least math and language arts by the beginning of the 1997–1998 school year. The letter states: "It is our understanding that currently California has developed content standards in language arts/reading and math and the State Board approved them in November and December 1997. To be fully compliant with Title I requirements, the State Board of Education must adopt performance standards as soon as possible."[16] The U.S. Department of Education requested CDE to provide evidence demonstrating that the state had in place content and performance standards with at least three levels of performance in at least math and reading/language arts and that the standards were challenging.

The 1998 review examined issues and practices related to federal programs as they were implemented in schoolwide programs. Although specific programs were examined, the review concentrated on how the programs were administered in an integrated, coherent fashion to support educational reform and student attainment of challenging content and performance standards as required by IASA. The weeklong review consisted of meetings with department staff in Sacramento and visits to two school districts, Santa Ana Unified School District in Orange County and Visalia Unified School District in Tulare County.

Key points made by USDE staff during the review include:

- the number of schoolwide programs is increasing rapidly, and thus the funding flexibility and program integration that characterize schoolwide programs should be studied carefully;
- it is important to use data in making decisions about program design and effectiveness;
- the CSRD Program is a new funding stream to facilitate the basic purposes of Title I-based schoolwide programs; and
- professional development should be a long-term process and linked to student performance.

USDE staff also recommended that in designing professional development the following be considered:

- comprehensive needs assessment and continuous setting of priorities based on student performance;
- coordination among professional development providers, including institutions of higher education;
- ongoing evaluation of professional development and use of data to design subsequent sessions; and
- use of student assessment results to evaluate professional development.

USDE staff commented that standards and assessment in California were moving schools to engage in reform. However, more technical assistance was needed to implement such a complex process. Districts and schools needed more clarification regarding the coordination of federal and state funds in schoolwide programs, and accountability was likely to be a major issue in the reauthorization of IASA.

According to the CDE description of the integrated reviews (May 11–15, 1998), among the successful strategies cited by USDE staff were that CDE staff and local educators were linking data to school improvement and providing training to ensure that all staff understood and supported standards and assessments. Only one noncompliant finding related to comparability of funding in Title I schools was cited by USDE staff.

CONCLUSION

The 1994 amendments to Title I of the ESEA sought to overhaul the program—and hence, the delivery of instruction to students in high-poverty schools—by shifting from a focus on remediation to high standards and accountability for higher achievement. The law also, for the first time, spelled out requirements for full inclusion of students with limited English proficiency in Title I programs, assessments, and accountability systems.

California was considered an especially important state with respect to Title I reforms because it received substantially more Title I funding than any other state; it enrolled 40 percent of the nation's students with limited English proficiency; and its achievement, including the achievement of its poor, African American, and Latino students, had lagged behind the rest of the country.

In prior studies, the Citizens' Commission reported that California's early implementation of Title I lacked coherence and failed to ensure high standards for all students. Since then, legislative and executive branch policy initiatives have sought to raise standards across the state, to hold educators accountable for improving student performance, and to increase state resources (in areas like class size) to schools. Many of these initiatives (e.g., the development and approval of state content standards in language arts, math, science, history/social studies; the beginnings of a uniform, objective accountability system; local improvement plans; and the state system of school support) were in accord with the letter and spirit of the 1994 provisions.

Notwithstanding such progress California still had a long way to go for full compliance with the requirements of the 1994 legislation and, in the judgment of the authors, to create a sound policy framework to ensure equity and opportunity for the state's most disadvantaged students. For example, the state had failed to:

- *Demonstrate that the statewide test (the SAT-9) was aligned with state content and performance standards.* Unlike other states that had carefully constructed their assessments based on their content standards, California chose to use a nationally norm-referenced multiple-choice test as the centerpiece of its new school accountability program. The state did not demonstrate that both the core test items and the augmented test satisfied federal criteria for alignment with state content standards. The state also did not demonstrate that it had adopted performance standards that determined how well students were mastering the content standards.
- *Develop valid and reliable multiple choice measures of student performance.* The state had moved away from a locally based accountability system that, by its own admission, was "not consistent from district to district" (California Department of Education, 2000c, p. 1). The CDE promulgated statewide standards for determining "adequate yearly progress" and identifying Title I program improvement schools. But the "adequate yearly progress" definition was based solely on schools' SAT-9 scores and did not yet incorporate "multiple measures" of student performance required by Title I. Although state education officials had plans to add additional assessment and other measures (e.g. attendance and graduation rates), it is uncertain whether these mea-

sures were added during the 2000-2001 school year in time to comply with Title I deadlines.

- *Provide for appropriate inclusion of ELLs in the assessment and accountability program.* The 1994 Title I provisions sought to obtain assessment results that painted a fair and accurate picture of student performance. With respect to ELLs, the law required students to be tested, "to the extent practicable in the language and form most likely to yield accurate and reliable information on their skills and knowledge" (Improving America's Schools Act of 1994, Part A). California law and policy were at odds with this provision. The state required all students, including those with limited English proficiency, to take the SAT-9 in English. These scores were then used to calculate the API. While the SABE/2 was administered (in addition to the SAT-9) to a subset of the Spanish-speaking student population (those in school 12 months or less), the scores were not used for Title I accountability purposes. Nor were Spanish-speaking students who had attended school more than a year, or students who spoke other languages, given a fair chance to demonstrate their knowledge and skill on native language assessments. Moreover, California educators were held accountable for ELLs' progress on assessments that may not have accurately reflected their true academic attainment.
- *Provide the resources, capacity building, and other assistance to schools and districts to ensure that all students have the opportunity to learn and to achieve high standards.* Although the state, under new political leadership, pumped substantial new funding into elementary and secondary education after this legislation, the lagging achievement of California's poor and minority students revealed that greater efforts were needed to ensure all students had sufficient opportunities to learn. The state began to develop a statewide system of school support and interventions in failing schools, but these initiatives were unlikely to fully meet the needs for school capacity building and assistance. Furthermore, state policymakers should have heeded early signs that well-intended measures could have perverse effects. For example, in reducing class size, many children in high-poverty schools and districts were left without fully qualified teachers or adequate classroom space. Finally, although the state developed content standards in science and social studies (as well as language arts and math), extensive teacher training and curriculum development initiatives may be needed to ensure that state testing and accountability policies do not result in a narrowing of the curriculum and an undue focus on teaching to the standardized test.

At the time this study was conducted California's plans for the final Title I assessments for accountability purposes were pending before the USDE for approval, conditional approval, or rejection. The law required these measures to be in place for the 2000–2001 school year and to apply to assessments administered in the spring of 2001. There is reason to doubt whether the corrections and improvements needed to come into compliance with federal law were made in time to satisfy statutory deadlines. Both state and federal education officials are challenged to devise a compliance and implementation plan for California that will make good on the promise of the 1994 Title I reauthorization to ensure that all students reap the benefits of standards-based reform.

NOTES

1. For a detailed analysis of the Department's early implementation and enforcement of the 1994 Title I law, see Citizens' Commission on Civil Rights, *Title I in the Mainstream: The Fight to Improve Schools for Poor Kids* (1999).

2. In its earlier report, the Citizens' Commission found that early implementation of the 1994 Title I requirements in California were largely deficient. For example, state policy permitted local school districts to set and enforce their own standards and to choose which assessments to use for Title I accountability purposes. The Commission also found that the state plan–a document required to be submitted to and approved by the U.S. Department of Education to maintain federal funding–did not sufficiently address how the state would ensure proper inclusion and accommodation of students with limited English proficiency. See *Title I in the Mainstream*, pp. 50, 53, and 75. This chapter provides an updated report on the state's progress since 1998 in implementing Title I and related educational reforms.

3. This chapter is excerpted in part from a preliminary report based on research conducted by Diane August and Dianne Piche for the Citizens' Commission on Civil Rights. The full final report will contain information regarding the development of the state Title I policies and the implementation of Title I in Fresno Unified School District and two schools within the school district. The Commission will publish the full final report. This chapter is reprinted with permission from the Citizens' Commission on Civil Rights, which retains the copyright.

4. For a detailed account of California's early Title I compliance history, see *Title I in Midstream*, p. 75. It describes USDE"s conditional approval of the CSP, the department's concerns about California's accountability system, and the eventual removal of the conditions.

5. In California, districts were required to use the STAR test (Stanford/9, Form T) as one component of their accountability system in Grades 2–11. Under the STAR provisions, students in Grades 2–8 had to be tested in the basic skills of reading, spelling, written expression, and mathematics. Students in Grades 9–11 had be tested in reading, writing, math, history-social science, and science.

6. At the time this study was conducted the Citizens' Commission was still awaiting an update from USDE on the status of federal approval of California's performance standards.

7. According to the document, these data were required as a condition of funding for several federally funded programs such as Title I, Title VII, and the Emergency Immigrant Education Program as well as by federal civil rights laws.

8. The state provided examples of additional types of measures that might be used: criterion-referenced tests; grade-point average; teacher observation measures

or checklists using rubrics or other scoring schemes; rating or work in student portfolios; grade-level promotional and graduation rates, including redesignation rates, rates of referrals to special programs or services, rates of attendance, participation, completion, suspension, rates of dropouts, college enrollments; and other standardized tests.

9. Mary Jean LeTendre, USDE, to Hanna Walker, CDE, September 24, 1999.

10. Judith Johnson, USDE, to Sonia Hernandez, CDE, November 5, 1999.

11. Instructions for Completing the Student Achievement School Report (SASR), Spring 1998 indicate that two components of a district's accountability system include (1) assurance of the quality of a district's measures, that is, that its assessments are valid, reliable, and comparable–or that the district is making progress in this direction and (2) assurance that a district's adaptation of the recommended model maintains high grade-level standards. The document provides explicit examples for districts in these two areas.

Districts were required to describe steps and procedures that were used to ensure rigor and comparability across classrooms and schools for all nonstandardized measures. For example, if a writing sample was to be used as one measure, the district had to include an assurance that the curriculum on which the assessment was based was at least as rigorous as the content standards adopted by the SBE. Districts also had to submit scoring rubrics and information on staff training. If class grades were used as one component of an accountability system, the district had to submit a description of the grading policy and an assurance that the course of study on which grades were based was at least as rigorous as the content standards adopted by the state board. (CSP, update, 1999). According to the Instructions for Completing the SASR, Spring, 1998 Edition, data was reported separately for the following groups of students: migrant, three categories of LEP (R-FEP, LEP-Content, LEP-ELD), special education 1, special education 2, and gifted and talented. The SASR is no longer required.

12. The rest of the document is devoted to describing what a plan has to contain. (From Local Improvement Plan–A tool for Educational Reform in California)

13. Districts scheduled for CCRs previously submitted local accountability plans and reported the number and percent of students meeting grade-level standards on the SASR. SASR data was used to select schools for on-site validation and also to provide the basis for findings on the Integrated Programs Item #4, which examines the local accountability system and student achievement.

14. Gerald Pirozzi, USDE, to Delaine Eastin, CDE, July 1996.

15. For those states that did not have content and performance standard for all students.

16. Mary Jean LeTendre, USDE, to Sonia Hernandez, CDE, March 2, 1998.

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CHAPTER 11

UNDERSTANDING STUDENT ACHIEVEMENT DIFFERENCES BETWEEN RURAL AND NONRURAL SCHOOLS

Implications for Title I Programs and Assessments

Jaekyung Lee

Rural education often has been discussed as a deficit model of instruction from which relatively low outcomes can be expected (Edington & Koehler, 1987).[1] While this perspective has been reinforced by some local studies, it is not supported by national data (NCES, 1994). Since the 1980s, the achievement scores of rural students have been comparable to national averages in virtually every subject tested. Recently, rural student achievement has significantly improved in eighth grade mathematics (NCES, 1997b). Indeed, recent federal legislation, including the 1994 Improving America's Schools Act, has enabled more inclusive and equitable education for poor, rural students whose circumstances place them at risk of educational failure (McCombs & Bansberg, 1997). While research on the effectiveness of Title I schoolwide programs in terms of student performance has yielded mixed and inconclusive results, most research has dealt with urban school districts and schools (Wong and Meyer, 1998). Lessons learned from the studies of school reform in urban settings are not directly applicable to rural settings without understanding both the advantages and disadvantages of being rural, particularly schooling factors that affect the achievement of rural students.

We expect students in different locations to experience different schooling conditions. The effects of school location on the performance of students may be better understood when we take into account demographic and organizational contexts in which schools work. Two different perspectives shape our understanding of rural schools (see Keith, Keith, Quirk, Cohen-Rosenthal, & Franzese, 1996). Researchers argue that rural schools have several distinct advantages: They often enjoy stronger community support and more parental involvement than nonrural schools; they may offer flexible scheduling and more individualized instruction; and they may have smaller class sizes, lower dropout rates, and safer school environments than their urban and suburban counterparts. Rural students and schools compare favorably with their urban counterparts on many learning-related measures, even after accounting for poverty levels (Lippman, Burns, & McArthur, 1996).

In contrast, a host of problems plague rural schools. Rural schools typically lack the facilities, physical plants, course offerings, and educational programs that typify larger, more resource-rich districts. Sparse population bases often result in geographic and cultural isolation, limited economic development, and restricted educational opportunities (McCombs & Bansberg, 1997). Rural schools also face a major problem in recruiting and retaining qualified teachers and support personnel. Teachers in rural districts are younger, less experienced, and hold fewer specialty or graduate degrees than teachers in nonrural settings (NCES, 1994). Moreover, rural students, facing relatively low parent and teacher expectations, tend to have lower educational aspirations than urban or suburban students (Cobb, McIntire, & Pratt, 1989).

These mixed perspectives have confused educators and policymakers as to important variables that might be addressed in seeking to improve rural schools. Whether rural and urban differences exist in student achievement has drawn little research attention until very recently.[2] Somewhat more focus has been given to contrasting small and large schools (Fowler, 1992). Research on school size suggests that small, rural schools are in many ways more effective than large, urban schools (Howley, 1994). At the same time, research on small schools, which includes the large majority of rural schools, revealed definitive disadvantages in terms of the availability of resources and advanced courses.[3] Given that rural schools have both the advantage of small school size and the disadvantage of low income level and low rates in the availability of advanced courses, I have conducted a more systematic analysis of the relationship among key schooling conditions and student outcomes in rural versus nonrural settings. This study employs quantitative methods to identify school-level factors that affect the achievement of rural students beyond the influences of student-level factors; most research has not adequately accounted for such multilevel, multivariate relationships.

The primary data source is National Assessment of Educational Progress (NAEP) 1996 eighth grade mathematics assessment. The NAEP data contain information on the mathematics knowledge, skills, understanding, and attitudes of a representative sample of eighth-grade students attending public schools in the nation. NAEP first collected student-level information on participation in Title I programs for mathematics assessment, which allows us to compare the performance of participating and nonparticipating students. Questionnaires completed by the students, their mathematics teachers, and principals provide an abundance of contextual data within which to interpret the mathematics results. In this study, schools and their students are classified into rural versus nonrural categories according to their values for the Type of Location variable on which the current NAEP sampling is based: Schools in Central City, Urban Fringe, or Large Town are treated as nonrural, and schools in Rural or Small Town are considered rural.[4]

TITLE I STUDENT ACHIEVEMENT IN RURAL AND NONRURAL SCHOOLS

According to findings from the *NAEP 1996 Mathematics Report Card for the Nation and the States* (Reese, Miller, Mazzeo, & Dossey, 1997), the percentage of students participating in Title I programs and services was 22 percent at Grade 4, 12 percent at Grade 8, and 2 percent at Grade 12.[5] Despite such significant difference in the rate of Title I participation among different grade levels, the achievement gap between Title I and non-Title I students in mathematics tends to be highly comparable across those three grades (31-point gap at Grade 4; 32-point gap at Grade 8; 35-point gap at Grade 12). These differences amount to about one standard deviation of the entire student sample's scale scores.

These aggregate national patterns of Title I participation and achievement gap in mathematics were broken down by type of school location. Table 1 shows the percentage of eighth grade students participating in Title I programs and services in rural and nonrural schools. The difference in the percentage of Title I students in rural and nonrural schools is very small (6 percent) and statistically insignificant: 95 percent confidence interval (95 percent C.I.) for this difference is 6 ± 7.5.[6] Table 1 also compares average mathematics scale scores of Title I and non-Title I students by type of school location. In both rural and nonrural schools, students who participate in Title I programs scored lower than their nonparticipating classmates. The achievement gap between Title I and non-Title I students, however, is much more significant in nonrural schools (95 percent

TABLE 1

Percentage of Eighth Graders Participating in Title I Programs and Their Average Mathematics Scale Scores by Type of School Location

	Rural		*Nonrural*	
	Percentage	*Average Score*	*Percentage*	*Average Score*
Participated	9 (2.8)	263 (7.5)	15 (2.5)	238 (2.3)
Did not participate	91 (2.8)	278 (2.0)	85 (2.5)	273 (2.0)

Notes: The NAEP mathematics scale ranges from 0 to 500. The standard errors of the statistics appear in parentheses. It can be said with about 95 percent confidence that, for each population of interest, the value for the entire population is within ± 2 standard errors of the estimate for the sample. In comparing two estimates, one must consider the standard error of the difference.

C.I. for the gap = 35 ± 6.1) than in rural schools (95 percent C.I. for the gap = 15 ± 15.5). More importantly, Title I students in rural schools perform significantly better than their counterparts in nonrural schools (95 percent C.I. for the gap = 25 ± 15.7), while non-Title I students in rural schools hardly perform better than their counterparts in nonrural schools (95 percent C.I. for the gap = 5 ± 5.7).

To help understand the level of achievement by Title I students in rural schools relative to nonrural schools, Table 2 shows the percentage of eighth graders at each of the mathematics achievement levels as well as the percentage of students below Basic by type of school location and Title I participation. About one half of rural Title I students perform at the lowest

TABLE 2

Percentage of Eighth Graders Attaining Mathematics Achievement Levels by Type of School Location and Title I Participation

	Rural		*Nonrural*	
	Title I	*Non-Title I*	*Title I*	*Non-Title I*
Advanced	0 (***)	2 (0.5)	0 (***)	4 (0.7)
Proficient	11 (4.7)	22 (1.6)	2 (0.8)	20 (1.3)
Basic	40 (6.6)	46 (1.8)	17 (1.5)	39 (1.3)
Below Basic	48 (9.5)	29 (2.8)	80 (2.1)	37 (2.0)

Notes: The cut scores for achievement levels in eighth grade mathematics are 333 for Advanced, 299 for Proficient, and 262 for Basic. Percentages in each column may not add up to 100 due to rounding. The standard errors of the statistics appear in parentheses. It can be said with about 95 percent confidence that, for each population of interest, the value for the entire population is within ± 2 standard errors of the estimate for the sample. In comparing two estimates, one must consider the standard error of the difference.

*** Standard error estimates cannot be accurately determined.

achievement level (i.e., below Basic), whereas 80 percent of nonrural Title I students perform at that level. Although a substantial proportion of both rural and nonrural school students perform below the minimal competency level, the gap between rural and nonrural Title I students is remarkable (95 percent C.I. for the gap = 32 ± 9.7). Rural student achievement, at least in eighth grade mathematics, appears to be not only better but also more equitable than does nonrural student achievement.

Here we need to note current limitations of the NAEP for assessing the achievement of Title I students and for evaluating the effects of Title I programs. In recent years, the NAEP test items have been tailored toward higher-achieving students, resulting in an imbalance in the assessment. A lack of items at the lower end of the scales, in which most Title I students are located, hamper efforts to describe what "below Basic" students know and are able to do (NCES, 1997a). Moreover, the NAEP results on differences between students who receive Title I services and those who do not should not be viewed as an evaluation of Title I services, given the fact that Title I services are intended for students who score poorly on assessments (Reese et al., 1997). To properly evaluate Title I programs, the performance of students participating in such programs must be monitored over time and their progress must be assessed against control group results (see Wong, Sunderman, & Lee, 1997). Thus, the above comparisons of rural Title I student achievement with its nonrural counterpart hardly demonstrate that Title I programs are more effective in rural schools than in nonrural schools. Rather, the results indicate the overall strength of rural education in terms of academic excellence and equity. The central question is whether these results are attributed to school effects as opposed to student or family effects. In the following sections, I examine differences between rural and nonrural schools in their key schooling conditions that affect student achievement.

SCHOOL EFFECTS ON STUDENT ACHIEVEMENT IN RURAL AND NONRURAL SCHOOLS

To guide data analyses, an analytical framework was developed in which student achievement is related to race, socioeconomic status (SES), coursetaking, and aptitude for mathematics (see Figure 1). Given the influences of those student or family characteristics, we see the effect of rural school location on student achievement as mediated by key schooling conditions. Rural schools have unique demographic features such as smaller school size and higher poverty level that affect their schooling conditions. These schooling conditions were assumed to work as intervening factors that involve curricular/instructional (instructional resources, advanced course, and progressive instruction) and social/organizational (professional train-

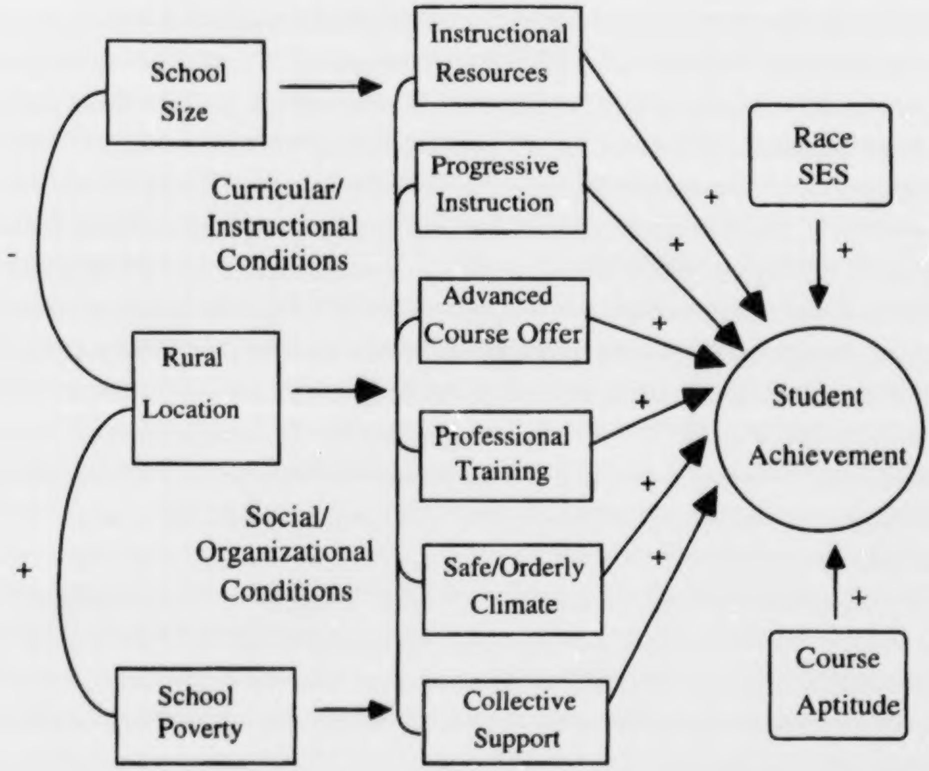
School Size
Curricular/ Instructional Conditions
-
Rural Location
Social/ Organizational Conditions
+
School Poverty
Instructional Resources
Progressive Instruction
Advanced Course Offer
Professional Training
Safe/Orderly Climate
Collective Support
+
+
+
+
+
+
Race SES
+
Student Achievement
+
Course Aptitude

FIGURE 1
Hypothetical Relations of Key Schooling Conditions to Student Achievement in Rural vs. Nonrural Settings

ing, safe/orderly climate, and collective support) features of schools.[7] Since many of these school factors as predictors of student achievement are highly correlated with one another, each one's unique effect on achievement has been sorted out as an outcome variable. This study focuses on how rural school location interacts with the previously mentioned schooling variables to affect student achievement in mathematics. The operating hypothesis is that rural schools have both the advantage of small school size and the disadvantage of low income level, which bring about differences between rural and nonrural schools in key schooling conditions, and that their mixed schooling conditions would in turn affect student achievement differentially.

To explore the above-mentioned hypotheses, key schooling variables were constructed from the 1996 NAEP mathematics teacher and school principal survey data through the factor analysis method.[3] Rural/nonrural school differences were examined across those factors through multivariate analysis of covariance (MANCOVA). Further, student mathematics achievement scores were analyzed to identify critical factors affecting the mathematics achievement of rural and nonrural students by means of the hierarchical linear model (HLM).

Operational Definition and Measurement of Key Schooling Factors

Instructional Resources

Previous NAEP assessments in several subject areas have shown positive relationships between teachers' reports of resource availability and their students' performance (Miller, Nelson, and Naifeh, 1995). In recognition of the potential provided by calculators and computers for increasing children's mathematical power, recommendations for improving mathematics education often include greater use of these tools in today's classrooms (NCTM, 1991). Items from the NAEP teacher survey were used to measure instructional resources (see Table 3).

Progressive Instruction

To help anchor mathematical concepts for students, teachers need to present mathematics in the everyday context and encourage students to work together in groups to solve problems (Resnick, 1987; Romberg & Carpenter, 1986). Student-centered instructional practices with a strong emphasis on higher-order thinking skills can be considered positive signs of the implementation of many recent recommendations for the reform of teaching mathematics (NCTM, 1991). Items from the NAEP teacher survey were used to measure progressive instruction (see Table 3).

Advanced Course Offerings

For students to learn important mathematical concepts at the high-school level, they must have the necessary foundation in mathematics at the middle-school level. While algebra seems to be the gateway toward improved mathematical learning at the secondary level, an analysis of the previous NAEP data demonstrated that course selection is generally a powerful indicator of mathematics achievement (NCES, 1996). The National Council of Teachers of Mathematics has emphasized the need for all eighth grade students to be taught a wide range of mathematical topics including algebra. The school's offering an algebra course to eighth grade students for high-school credit was used from the NAEP school survey (0 = no; 1 = yes).

Professional Training

Improving teachers' skills and their content knowledge is also essential in enhancing the quality of public education. A rich and powerful concep-

TABLE 3

Summary of Factor Analysis Results on Key Schooling Factors

Instructional Resources: A factor composite of mathematics teachers' reports about instructional resources in the following aspects: providing resources and access to school calculators. Student-level factor loadings are as follows: T041201, 0.74; T045001, 0.74. The factor has an eigenvalue of 1.09 and explains 54.6 percent of the combined variance.

Progressive Instruction: A factor composite of mathematics teachers' reports about progressive instruction in the following aspects: addressing reasoning for unique problems, communicating mathematics ideas, analyzing how often students cooperatively solve problems, using a calculator, writing reports/doing projects, cooperatively discussing mathematics problems, and working real-life mathematics problems. Student-level factor loadings are as follows: T058008, 0.69; T058009, 0.58; T044512, 0.56; T044505, 0.39; T044508, 0.45; T044509, 0.63; T044510, 0.59. The factor has an eigenvalue of 2.24 and explains 32 percent of the combined variance.

Professional Training: A factor composite of mathematics teachers' reports about professional training in the following aspects of training: estimation, problem-solving, probability and statistics, manipulatives, calculators, and student's mathematics thinking. Student-level factor loadings are as follows: T057001, 0.34; T057004, 0.36; T057005, 0.45; T056905, 0.77; T056906, 0.69; T056907, 0.80. The factor has an eigenvalue of 2.17 and explains 36 percent of the combined variance.

Safe/Orderly Climate: A factor composite of principals' reports about the safe/orderly climate in the following aspects: student tardiness, student absenteeism, physical conflicts, teacher absenteeism, racial and cultural conflicts, lack of parental involvement, gang activities, and student misbehavior. School-level factor loadings are as follows: C032401, 0.72; C032402, 0.68; C032404, 0.74; C032406, 0.56; C032407, 0.54; C032409, 0.62; C032413, 0.65; C032414, 0.73. The factor has an eigenvalue of 3.48 and explains 43 percent of the combined variance.

Collective Support: A factor composite of principals' reports about collective support in the following aspects: teacher morale, student attitudes to academics, parental support for academics, and student regard for school property. School-level factor loadings are as follows: C032502, 0.65; C032503, 0.83; C032505, 0.77; C032506, 0.73. The factor has an eigenvalue of 2.25 and explains 56 percent of the combined variance.

tion of teaching knowledge is necessary to develop professional standards of practice (Shulman, 1987). Thus, teacher education and training should include not only content knowledge but also pedagogical content knowledge that provides a basis for professional decision making. Items from the NAEP teacher survey were used to measure professional training (see Table 3).

Safe/Orderly Climate

School organization and learning environments are likely to play an important role in shaping the classroom opportunities provided to students through which academic achievement is promoted. According to the National Education Goals, "By the year 2000, every school in the United States will be free of drugs, violence, and the unauthorized presence of firearms and alcohol and will offer a disciplined environment conducive to learning" (National Education Goals Panel, 1994). Items from the NAEP school survey were used to measure safe/orderly climate (see Table 3).

Collective Support

Many researchers have found that effective schools are defined in terms of a collective identity. Informal support and collegial relationships based on the sense of having a common mission is seen as essential for cultural coherence, which in turn motivates the members of a school community toward a more vigorous academic vision (Lee, Bryk, & Smith, 1993; Louis & Kruse, 1995; Newmann and Wehlage, 1995). Items from the NAEP school survey were used to measure collective support (see Table 3).

Analyses of Differences in the Schooling Conditions between Rural and Nonrural Schools

Figure 2 profiles rural (N = 58) and nonrural (N = 128) schools on common, standardized scales of their demographic, instructional, and organizational variables. Relative to their nonrural counterparts, rural schools were found to be smaller and poorer; have lower levels of instructional resources, progressive instruction, and algebra course-taking; and have higher levels of professional training; safe/orderly climate, and collective support. Generally, these multiple comparisons reveal that rural schools have relatively disadvantaged curricular/instructional conditions as well as relatively advantaged social/organizational conditions. The gaps in schooling conditions between rural and nonrural schools follow this order in effect size unit: school size (1.1), safe/orderly climate (.72), advanced course-taking (.45), professional training (.45), instructional resources (.31), school poverty (.27), progressive instruction (.26), and collective support (.1).

Since the organizational and instructional conditions of schools are interrelated and are likely to be conditional on demographic differences, a multivariate analysis of covariance (MANCOVA) design was used to analyze the differences between rural and nonrural schools in their schooling conditions. The independent variable was school location (i.e., rural vs. nonru-

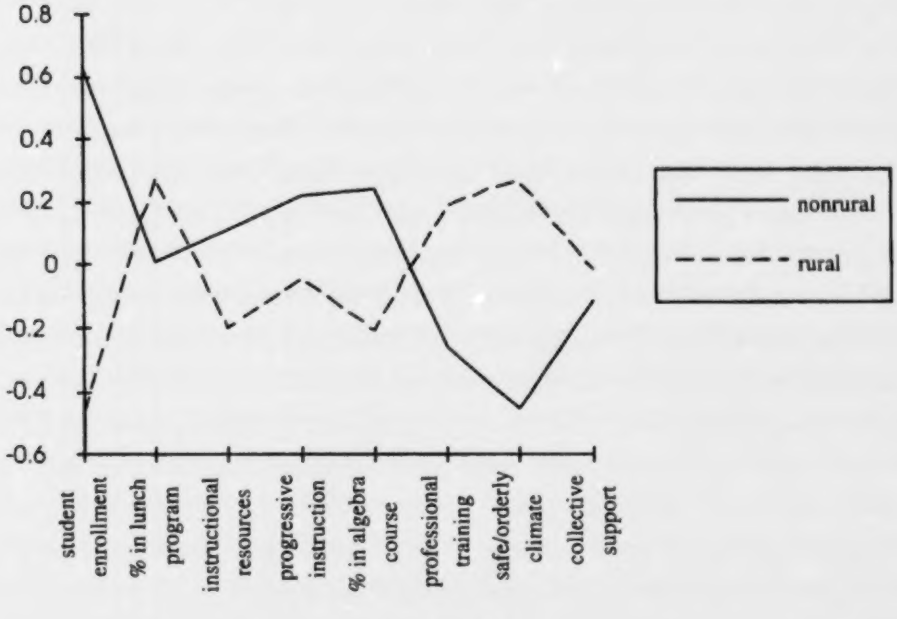

FIGURE 2
Profiles of Rural and Nonrural Schools on Standardized Scales
(Mean = 0 and Standard Deviation = 1)

ral). The dependent variables were the six instructional and organizational factor scales defined in the previous section. The covariates in the design were school size (student enrollment) and school poverty (percentage of students who receive free or reduced-price lunch). These covariates were included in the analysis, given the finding that rural school conditions are featured by the combination of smaller school size and higher poverty level.

The schools' scores on the six instructional and organizational factor scales were adjusted to control for differences associated with the covariates because the MANCOVA test of the within-cells regression effect was statistically significant (Wilk's lamda = .66, $F = 5.54$, $P < .001$). Specifically, school size was negatively related to safe/orderly climate; smaller schools tend to be safer and more orderly. At the same time, school poverty was negatively related to most of the six factors: poorer schools have less instructional resources, provide less progressive instruction, are less safe and orderly, and get less collective support.

The multivariate test for the school location main effect was significant (Wilk's lamda = .87, $F = 3.68$, $P < .01$), indicating rural/nonrural school differences in the six instructional and organizational factor scales, given their school size and poverty gaps. Individual univariate tests for each of the six scales showed that rural versus nonrural school differences were significant (at the .05 significance level) in advanced course offerings, safe/ orderly climate, and professional training but insignificant in instructional resources, progressive instruction, and collective support. Specifically, after controlling for the effects of school size and poverty, Rural schools are safer and more orderly, have less students taking an algebra course, and have better-trained teachers. This indicates that rural schools have mixed schooling conditions for student learning even when they are compared with nonrural schools of similar size and poverty level.

Analyses of School Effects on the Achievement Gap between Rural and Nonrural Students

Student achievement is critically affected by variables operating at different levels of the school policy organization. If academic achievement depends on characteristics of students and teachers and the organizational context in which teaching and learning occurs, one cannot meaningfully assess the achievement gap between rural and nonrural students without considering the underlying process. To examine the effect of school location on student achievement, a multilevel analysis of the achievement gap between rural and nonrural schools was conducted by capturing the relevant properties of both school-level and student-level variables. The NAEP data is hierarchical in nature because students are nested within schools. Hierarchical linear models (HLM) address the problem of students nested within schools (Bryk & Raudenbush, 1992). The use of HLM on NAEP data copes with the problem of sampling error resulting from the multistage sampling in NAEP. The data were weighted at the student and school level, and the weights at each level were normalized. The measurement error resulting from the multiple imputation of NAEP scores was taken into account by averaging the parameter estimates obtained from the HLM analyses of five plausible values. The eighth grade student composite score on the total mathematics assessment was used as the dependent variable.

By using a sample of students within each school, a student-level linear regression model was estimated for each school to predict the association of student/family characteristics with student achievement. Simultaneously, a school-level regression model was estimated for a sample of schools to predict the association of key school characteristics with school average achievement adjusted for between-school differences in student/ family characteristics. Measures of key schooling conditions as defined in the previous section were used. Removing cases with missing values on any of the predictors produced an analytical sample of 3,112 students nested within 123 schools across the nation.

The HLM program (Bryk, Raudenbush, & Congdon, 1996) was used to partition the total variance in mathematics achievement into its within- and between-school components. The within-school model regressed mathematics achievement for student i within school j as a function of student race, SES, aptitude, and course-taking (see Level-1 model).

Level-1 model (Student Level):

$$Y_{ij} = \beta_{0j} + \beta_{1j}X_{1ij} + \beta_{2j}X_{2ij} + \beta_{3j}X_{3ij} + \beta_{4j}X_{4ij} + e_{ij}$$

Y_{ij} is the mathematics achievement of student i in school j (a composite of the five content strand scales, i.e., Number Sense, Properties, and Operations; Measurement; Geometry and Spatial Sense; Data Analysis, Statistics, and Probability; and Algebra and Functions).

β_{0j} is the intercept for school j, i.e., adjusted school mean score.

$X_{1}ij$ is the indicator of student i's race, which is a dummy variable for a white student in school j.

$X_{2}ij$ is the indicator of student i's family social status and support (a factor composite of parental education level, availability of reading materials at home, and eligibility for free/reduced-priced lunch) in school j.

$X_{3}ij$ is the indicator of student i's taking advanced mathematics courses in school j, which is a dummy variable for currently taking an algebra course.

X_{4ij} is the measure of student i's aptitude for mathematics (a factor composite of liking mathematics, being good in mathematics, understanding mathematics class) in school j. e_{ij} is a Level-1 random effect that represents the deviation of student $_{ij}$'s score from the predicted score based on the student-level model.

The Level-1 predictors were grand-mean centered so that the intercept, β_{0j}, could be interpreted as an adjusted mean for school j. This adjustment was chosen to sort out the unique effects of school location and related schooling conditions on achievement beyond the influences of student/family characteristics.[9] Given this student-level model, the following four successive school-level models were tested.

(1) The Unconditional Model

The first step in the HLM estimation process involved fitting an unconditional or random regression model. Notice that all Level-1 regression coefficients except the intercept were constrained to be constant across schools, and $ß_{00}$ is the mean value for the school-level achievement effects beyond the influences of student/family characteristics.

Level-2 model (School Level):

$ß_{0j} = \gamma_{00} + r_{0j}$
$ß_{1j} = \gamma_{10}$
$ß_{2j} = \gamma_{20}$

$ß_{0j}$ represents school j's average mathematics achievement adjusted for its composition of students' academic, racial, and social backgrounds.

(2) Location-Effects Model

An indicator for the rural versus nonrural location of a school was added to the between-school model.

$ß_{0j} = \gamma_{00} + \gamma_{01}L_j + r_{0j}$

L_j is an indicator for the type of school j (0 = nonrural; 1 = rural). On the basis of the type of location variable in the NAEP data, schools in Central city, Urban fringe, or Large town were classified as "nonrural," and schools in Rural or Small town were classified as "rural."

(3) Composition-Effects Model

School size and poverty variables were included in the model for school average achievement. Since rural schools tend to be generally smaller and poorer than their nonrural counterparts, these confounding factors are controlled for in assessing the effect of school location on mean mathematics achievement.

$ß_{0j} = \gamma_{00} + \gamma_{01}L_j + \gamma_{02}C_{1j} + \gamma_{03}C_{2j} + r_{0j}$

C_{1j} is student enrollment in school j.
C_{2j} is the percentage of students receiving free or reduced-price lunch in school j.

(4) Schooling-Effects Model

Explanatory models were developed to illuminate how differences among schools in their schooling characteristics might influence the average achievement level of students in schools. This model hypothesized joint effects of school location, composition, and schooling conditions. It should be noted that schooling conditions in both rural and nonrural schools varied considerably and these organizational and instructional differences might affect outcomes, even after adjusting for school size, school poverty, and the individual student characteristics already included in the Level-1 model.

$$\beta_{0j} = \gamma_{00} + \gamma_{01}L_j + \gamma_{02}C_{1j} + \gamma_{03}C_{2j} + \gamma_{0p}S_{kj} + r_{0j} \ (p = 4 - 9;\ k = 1 - 6)$$

S_{1j} is the average measure of instructional resources as reported by the mathematics teachers in school j.
S_{2j} is the average measure of progressive instruction as reported by the mathematics teachers in school j.
S_{3j} is the indicator of offering an algebra course to eighth grade students for high-school credit in school j (0 = no; 1 = yes).
S_{4j} is the average measure of professional training as reported by the mathematics teachers in school j.
S_{5j} is the measure of safe/orderly climate as reported by the principal (or other administrator) of school j.
S_{6j} is the measure of collective support as reported by the principal (or other administrator) of school j.

The results of HLM analyses are summarized in Table 4. There was much greater variation in mathematics achievement at the student level than at the school level: Within-school variance was about two times larger than between-school variance. At the student level, all of the four predictors were significantly, positively related to mathematics achievement, and they explained about 33 percent of within-school variance. At the school level, the comparison of rural and nonrural schools without any control for other variables showed that rural schools tend to perform significantly better than nonrural schools (gap = 9.07 in Location-Effects Model). The academic excellence of rural schools relative to nonrural counterparts in terms of average mathematics achievement became less significant when school poverty and size factors were considered (gap = 5.71 in Composition-Effects Model). The advantage of being smaller seemed to exceed the disadvantage of being poorer.

When the effects of instructional and organizational factors along with demographic factors were included, the rural-nonrural achievement gap became small enough to be insignificant (gap = 5.43 in Schooling-Effects Model). School composition effects (size and poverty) also became smaller when schooling effects were considered. The six schooling-related predictors were all positively related to school average achievement, whereas only the effects of safe/orderly climate and algebra course offered turned out to be significant at the .05 level. Here again, the rural schools' advantage of being safer and more orderly (among other organizational factors) tends

TABLE 4
Summary of the HLM Analysis Results for all Schools (3,112 Students in 123 Schools)

	Estimated Coefficients			
	Unconditional Model	*Location-Effects Model*	*Composition-Effects Model*	*Schooling-Effects Model*
School-level Effects				
Adjusted Mean Outcome	269.85***	267.06***	268.40***	268.25***
Rural Location		**9.07***	**5.71^**	**5.43**
School Size			-5.09**	-4.35**
School Poverty			-7.77***	-5.32**
Instructional Resources				0.36
Progressive Instruction				2.42
Algebra Course Offered				8.99*
Professional Training				1.35
Safe/Orderly Climate				4.07*
Collective Support				0.23
Student-level Effects				
Race (White)	14.33***	14.33***	14.33***	14.33***
Socioeconomic Status	6.27***	6.27***	6.27***	6.27***
Math Course (Algebra)	27.93***	27.93***	27.93***	27.93***
Aptitude for Math	8.67***	8.67***	8.67***	8.67***
	Percent Variance Explained by Each Model			
school-level	--	5	30	41
student-level	33	33	33	33

Notes: ^ P < .10, * P < .05, ** P < .01, *** P < .001

to be balanced out by their disadvantage of offering fewer advanced courses (among other instructional factors). When those key schooling factors were taken into account, the percentage of between-school variance explained by the model increased from 5 percent in the Location-Effects Model to 41 percent in the Schooling-Effects Model.

In order to find out whether the findings from all sample schools also apply to Title I schools, additional analyses were conducted that focused on Title I schools by creating a subsample on Title I (45 schools out of the 123 schools). There were 33 nonrural schools and 12 rural schools in the subsample, which respectively have 48 percent and 30 percent of Title I students on average. The same HLM models were tested on the subsample, and their results are summarized in Table 5.

TABLE 5
Summary of the HLM Analysis Results for Title I Schools
(976 Students in 45 Schools)

	Estimated Coefficients			
	Unconditional Model	*Location-Effects Model*	*Composition-Effects Model*	*Schooling-Effects Model*
School-level Effects				
Adjusted Mean Outcome	264.24***	260.48***	268.40***	261.33***
Rural Location		**12.88^**	**6.49**	**3.88**
School Size			-6.08*	-5.58^
School Poverty			-9.88***	-7.26*
Instructional Resources				-1.67
Progressive Instruction				3.48
Algebra Course Offered				0.33
Professional Training				4.79
Safe/Orderly Climate				3.55
Collective Support				-0.86
Student-level Effects				
Race (White)	12.96***	12.96***	12.96***	12.96***
Socioeconomic Status	5.88***	5.88***	5.88***	5.88***
Math Course (Algebra)	27.87***	27.87***	27.87***	27.87***
Aptitude for Math	10.22***	10.22***	10.22***	10.22***
	Percent Variance Explained by Each Model			
school-level	--	7	39	40
student-level	31	31	31	31

Notes: ^ P < .10, * P < .05, ** P < .01, *** P < .001

As we compare Table 4 and Table 5, we can find both similarities and discrepancies between full sample and Title I subsample results. For student-level effects, the results are highly consistent. For school-level effects, some of the results are consistent and some are inconsistent. Rural Title I schools perform better than their nonrural counterparts (gap = 12.88 in Location-Effects Model). The average score gap between rural and nonrural Title I schools, however, tends to drop substantially as the effects of both school size and poverty variables are controlled for (gap = 6.49 in Composition-Effects Model). As key schooling variables were added to the model, the achievement gap became smaller and remained insignificant (gap = 3.88 in Schooling-Effects Model).

DISCUSSION

While recent changes in Title I legislation focus on improving the performance of schools serving low-income students rather than on providing remediation to individual students, neither federal and nor state policies sufficiently take into account the significant differences between rural and nonrural schools in schooling conditions that affect student achievement. Results comparing the performance of Title I and non-Title I students in rural and nonrural schools, based on the 1996 NAEP eighth grade mathematics assessment data, showed the equally higher achievement of rural students relative to their nonrural counterparts. Whether these results are attributed to student/family conditions or to school effects is an important research question with implications for systemic school reform.

Multilevel analyses of the NAEP data were conducted to disentangle school effects from student/family effects. This study found that rural eighth-grade students accomplish relatively higher levels of mathematics achievement than do their nonrural counterparts, which is attributable to school effects beyond student/family influences. Rural schools' comparative advantage of small size and disadvantage of high poverty lead to their mixed instructional and organizational conditions for teaching and learning. In comparison with their nonrural counterparts, rural schools tend to have a better social/organizational context (i.e., teacher training, safe/orderly climate, and collective support) conducive to higher performance, but they suffer from poor curricular/instructional conditions (i.e., classroom resources, advanced course offerings, and progressive instruction) which balance out achievement gains.

Given that many rural students are poor and attend schools whose instructional resources and course offerings are limited, the level of their academic performance relative to their nonrural counterparts is encouraging. Indeed, this study shows that rural schools, having achieved so much with relatively fewer resources, can provide a model of strength worth studying and emulating. These findings hold up in Title I schools with the reservation that schooling effects are not so evident. Like most studies using sample datasets, however, it cannot offer a focused, qualitative picture of similarities and differences in schooling processes and school environment in rural and nonrural settings. Thus, the findings of this study should be used to guide subsequent in-depth case studies. It is also cautioned that the findings of this study may not be generalized to other grade levels and subject areas.

With those limitations and caveats in mind, this study has implications for designing and implementing Title I schoolwide programs. The findings indicate a need for differentiated school improvement strategies in rural versus nonrural settings. Rural schools should not only better capitalize on existing social capital but also focus more effort on upgrading their relatively weak curriculum and instruction. In contrast, nonrural schools should not only better use existing curricular/instructional resources but also invest more effort in improving their relatively unfavorable school climate and building a strong school-community network. The study also has implications for the current NAEP program in assessing the achievement of Title I students and informing the effects of Title I programs and services. The NAEP program should continue to monitor the performance of Title I program participants in future assessments, but at the same time it needs to provide more information on their program characteristics.

NOTES

1. The research in this chapter was supported by Grant No. R902B980008 from the U.S. Department of Education under the NAEP Secondary Analysis Program. The views expressed herein are solely those of the author.

2. Recent research or media reports, dealing with the effects of school location on student outcomes, tend to pay exclusive attention to the disadvantages of urban schools relative to both suburban and rural schools (e.g., Lippman et al., 1996; Education Week, 1998).

3. Still others have suggested a compromised view that "schools should be neither too large to inhibit a strong sense of community nor too small to offer a full curriculum and adequate instructional facilities." (Lee, Bryk, & Smith, 1993).

4. These classifications are based on geographic characteristics of the schools' locations and are determined by the Census Bureau definitions of metropolitan statistical areas (MSAs), population size, and density. Rural includes all places and areas with a population of less than 2,500. Small Town is defined as places outside MSAs with a population of less than 25,000 but greater than or equal to 2,500. An advantage of using of the Census definition of rural is that schools are linked to places rather than only counties and it is possible to examine the distribution of rural schools across the different types of counties within which they are situated—including metropolitan areas. But we recognize that the Census Bureau definitions do not take into consideration the type of employment in that area and the degree of isolation (see Khattri, Riley, & Kane, 1997 for different definitions of "rural").

5. Students who participated in such services in the past but do not currently receive services are not identified as Title I participants.

6. Value zero is within the confidence interval; therefore, insufficient evidence exists to claim that Title I participation rate in rural schools differs from nonrural schools.

7. This differentiation builds on an important distinction articulated by Bidwell and Kasarda (1980) between the school as a context for learning and the instructional processes of schooling through which learning actually occurs.

8. In the case of teacher measures, the eighth grade math teachers are matched to their students, and the school average values of paired student measures are calculated with proper weight.

9. The research on rural education often does not include adequate control variables, making it difficult to determine whether a particular phenomenon is

truly "rural," or whether it is merely observed in a rural setting and could be associated with other conditions (Khattri, Riley, & Kane, 1997).

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CHAPTER 12

EPILOGUE
A Summary of Recommendations

Kenneth K. Wong

This epilogue summarizes the recommendations of the second national invitational conference on the impact of Title I schoolwide programs and whole school reform, "Research-based Lessons from Title I Implementation: Examining Different Strategies for Improving Student Outcomes." This conference, held in the fall of 2000 and sponsored by the mid-Atlantic educational laboratory, the Laboratory for Student Success, brought together leading researchers, policymakers, and practitioners to continue and broaden the work begun in May 1999 at the previous Title I conference. At the 1999 conference, participants considered the knowledge gap in improving practice and policy in Title I schoolwide programs. Issues on cost effectiveness and strategies on service coordination were discussed.

At the second national conference, participants discussed the Year 2 findings of the National Study of Effective Title I Schoolwide Programs and the Whole School Initiative Study and examined the effects of federally endorsed and state/district-initiated comprehensive reform models in high poverty schools. The focus of this conference was particularly timely in view of the upcoming reauthorization of the Elementary and Secondary Education Act (ESEA) and funding allocation for Title I schoolwide programs. Following the recommendations of the first conference, the second meeting expanded the discussion to include topics affecting poor schools such as race, language, and mobility. A particular area of concern was the availability of services to English language learners in Title I schoolwide programs. Participants also addressed such cross-cutting issues as the role of the state in strengthening Title I programs, teacher quality, standards-based assessment, investment in technology, and parental involvement that are an important part of the national education reform agenda. The conference provided a forum for practitioners to discuss how schoolwide programs and whole school reform can be effective in improving teaching quality and student performance and gave the participants an opportunity to build and expand upon professional networks that have fostered a wider adoption of effective strategies in challenging urban and rural settings.

Following discussions of these findings in the plenary sessions, participants broke into workgroups to discuss schoolwide program implementation. The following section highlights their recommendations on how to increase the effectiveness of this Title I reform effort.

CREATING EFFECTIVE SCHOOLWIDE PROGRAMS

What ingredients go into the creation of successful schoolwide programs? Conference participants reflected on their own experiences in Title I programs and identified strategies relating to resource allocation, hiring practices, parental involvement, early intervention programs, and curricular innovations that have led to more effective schoolwide programs. They also contemplated the effects that portable entitlements might have on the future of Title I schools.

Resource Allocation

Much of the discussion on how to create effective schoolwide programs dealt with resource allocation. Schoolwide programs must make innovative use of staff, resources, and programs if they are to be successful. Often, resources are spread so thin that they are not used as effectively as they could be. Successful schoolwide programs use money creatively and aggressively seek partnerships with outside organizations to stretch their resources. The following strategies were identified as means of overcoming fiscal constraints:

- Schools should be allowed to craft their own programs by blending monies and developing creative approaches to program involvement.
- Principals need to become skillful financial managers to make the most of the various resources available to the school.
- The central district office must be lobbied to become an enthusiastic supporter of the school's reform efforts.

One key "resource" often overlooked in developing effective Title I programs is school morale. High school morale can cushion a school struggling against the inevitable fiscal and organizational problems encountered in implementing a schoolwide program. Schools can increase morale by taking an active role in encouraging the staff, parents, and the larger community to buy-in to the reform program. In particular, teacher morale can be improved by:

- increasing administrative support for teachers by compiling a cumulative database of the student body so that teachers can identify particular needs of the students at the beginning of the year,
- offering professional development opportunities to ensure that the reform effort is sustained and not watered down over time, and
- providing mentors for new teachers.

Teacher colleges also have a role in preparing their students to implement reform programs effectively by:

- providing teaching candidates with exposure to real-life situations,
- teaching students effective parental involvement strategies, and
- doing more to keep abreast of what schools need and becoming knowledgeable about their reform initiatives.

The Challenge of Finding Quality Teachers

The problem of teacher shortages and its relationship to the issue of teacher quality was an area of intense debate, and participants cited many factors that they believed were serious obstacles facing poor districts in the effort to provide their schools with high quality teachers:

- Large, wealthier districts are able to pay higher salaries than small or poor urban districts.
- The burden of meeting Title I accountability requirements is a disincentive when hiring teachers in poorer schools.
- Even when qualified candidates are available they often face obstacles to employment. Teachers who are older or have advanced degrees have a hard time getting hired because they cost too much.
- Often, school boards dictate salaries and hiring decisions and principals don't get a chance to interview the candidates, so their input regarding appropriate personnel is missing from the process.
- The district places too much confidence in the entrance exams, but they don't measure the ability of individuals to teach in front of the class.
- Teachers from small schools come unequipped to deal effectively with inner-city students.

- The tenure system prevents schools from making necessary changes in their staffs and hiring procedures.

It was roundly agreed that these structural problems must be faced at the district and state level in order for reform programs to meet their potential.

Parental Involvement

Participants readily agreed that parental involvement is crucial for the success of schoolwide programs and that the lack of involvement has been an obstacle in many reform efforts. They placed particular emphasis on the need for schools to take the initiative in cultivating better relations with parents and to extend these efforts to broader community outreach, especially in ethnically diverse neighborhoods where residents often do not feel welcome at the schools. There was also the recognition that schools need to improve their communication with parents to show that the school values their involvement and to explain clearly to parents how they can assist the school in furthering their children's education.

The following suggestions were made concerning steps schools could take to improve their relations with parents:

- The staff needs to understand their role as ambassadors to the parents; hence, the front desk must present a welcoming atmosphere.
- Language barriers should be recognized and efforts should be undertaken to teach prominent community foreign languages to teachers and office personnel.
- Parents should be encouraged through newsletters, websites, and home visits to be more involved in their children's schooling.
- Parents should be given significant roles in the school to implement the reform agenda.

A number of specific recommendations were made to foster effective parent–school partnerships:

- Develop specific guidelines to delineate parental responsibilities to advance student success.
- Offer parent workshops to encourage parent support of their children's learning.
- Conduct parent academies to teach parents literacy and reading strategies.
- Tailor parent–school compacts to fit the unique needs of the school and involve the children.
- Acquaint parents with learning technologies by offering computer workshops and giving stipends to parents who participate in such workshops.

- Target parent events to particular grade levels and bolster support for these events.
- Open a district-wide resource center for parents and the community.

Community outreach is equally essential and can be pursued through efforts to involve local businesses, churches, and community centers in educational activities that support the school's programs. Ideas for community outreach include the following:

- Develop school and community cohesiveness by encouraging parents to "adopt" other parents who are unable to come to school, thereby increasing the number of parents involved in the school.
- Network with hospitals and pediatricians to furnish reading material to parents, especially first-time parents and English language learners.
- Work with the larger community to raise funds for after-school clubs and athletic activities for children.

Early Intervention Programs

Efforts to promote reading are at the heart of early intervention programs. Participants concurred that it is important to ensure that all children can read on grade level by 3rd or 4th grade. Particular programs such as Reading Recovery, Assure Readiness for Learning, and Reading Academy were recommended to promote reading. Specific suggestions to address reading deficiencies include:

- Align the curriculum and reading program.
- Blend whole language and basal instruction.
- Use integrative computerized programs.
- Use flexible grouping with whole group instruction.
- Alternate reading classes and set aside blocks of time for reading and writing.
- Reduce class size by using internships programs (The Balanced Literacy Program in Philadelphia).
- Try "looping," in which teachers have the same children for two years.
- Start a "Bags of Books" program in which books go home with information about the 100 Book Challenge program.
- Conduct tutoring with Big Brother/Big Sister Programs.
- Include all childcare providers on committees to ensure coordination of services.
- Encourage parents to use technology at home to assist their children in reading comprehension.

Subject Matter Priorities

Education critics have sometimes complained that there is an overemphasis on literacy and math to the exclusion of other subjects such as science. Besides the priority given to mastering reading and math skills, schools often have weak science programs because of the increased difficulty of attracting competent science teachers. Hence, class sizes in science tend to be larger than in other disciplines. Among the suggestions made to improve science instruction were to:

- provide a balance of subject exposure through cross-curricular programming,
- integrate math and science so that the disciplines aren't seen as separate,
- increase professional development opportunities for science teachers, and
- seek partnership programs with outside organizations to enrich the science curriculum.

Portable Entitlements

Many critics of Title I programs view portable entitlements as a means of rescuing students from failing schools. Under such proposals, funds would follow the student into alternative public or private school programs. Conference participants voiced concerns about the possible consequences for Title I schools affected by students departing for alternative programs. In addition to the loss of vital funding, participants feared that portability would increase the already high rates of student mobility and destroy a school's consistency in operating and implementing reform programs. They agreed that more research is needed on how student transience affects the teaching staff and the school's reform efforts.

A second concern focused on accountability standards for alternative programs. Successive waves of legislation have endeavored to raise accountability standards for Title I programs; therefore, alternative programs must be held to similar standards to ensure that public and nonpublic schools are on an "even playing field" in evaluating their academic effectiveness.

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